

The United States MILLER

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CRANSON'S SILVER CREEK ROLLER BUCKWHEAT SHUCKER.

The manufacture of Buckwheat flour is rapidly assuming a place of great importance, but to successfully carry it on, purity and quantity of product must be secured, while economy in carrying out the flouring process is essential to render its undertaking remunerative. G. S. Cranson, of Silver Creek, N. Y., a practical miller of forty years experience, and who has made the manufacture of buckwheat flour an especial study, conceived the idea that rollers were preferable to stones for certain steps in the process of its manufacture, and after long experience succeeded in producing the SILVER CREEK ROLLER BUCKWHEAT SHUCKER, which by actual service in more than five hundred mills in the United States and Canada, has proved itself to be the most perfect machine of its class, and in inviting your careful investigation of its merits we beg to submit the following statement of facts. The manufacturers say: "The increased purity and value of the flour made by the use of this machine, has in many cases quadrupled the business of those using it, and given them a profit of twenty-five cents per bushel over the old method of manufacture. During the past year more than 5,000,000 bushels of Buckwheat have been treated upon these machines without one single word of complaint or dissatisfaction, but with innumerable expressions of satisfaction and praise. The shucks are so perfectly removed that only two screens and one small suction fan are required for a suitable separation of the meats from the shucks. We have, at great expense, devised suitable machinery for making our iron rolls surpass in durability, sand stones, iron or emery plates. No time is required to balance, tram, pick, face or furrow our rolls, as all stone devices require. Our Improved machine is so perfectly balanced and carefully adjusted in all its parts that no trouble or annoyance is occasioned the miller in operating it. It runs very light, less power being required than any smutter having capacity for treating the same amount of grain. More than FIVE HUNDRED SILVER CREEK ROLLER SHUCKERS are in use giving in every case perfect satisfaction."

We cheerfully advise all millers in need of buckwheat machinery to address Messrs. G. S. Cranson & Son, Silver Creek, N. Y., for terms and further particulars. The accompanying illustration will give the reader a good idea of the machine.

ABOUT BILLS OF LADING.

The importance of having through bills of lading made out properly is plainly indicated by the following letter from a large London flour importing house to one of the heaviest milling firms in Milwaukee:

Dear Sirs: We wish to call your attention to the fact that most through bills of lading are made out in such a way that we have great difficulty in recovering amounts for short deliveries, damages, etc. To give instance—We have a bill of lading before us headed as follows:

"The Red Line Transit Co. and the outside steamer —, from New York"; and another, "The Great Central Route Blue Line and the Monarch Line Steamship."

In the first case we have no responsible firm or company mentioned in case of any claim, and in the second, instead of "Monarch Line, S. S.," the company owning the "Monarch Line" should be mentioned; which is the Royal Exchange Shipping Company, Limited.

We have had so much trouble and expense in respect to claims, that we hope in future you will always have the name of some responsible party inserted in all your bills of lading.

Yours truly,

The following letter has been handed to us for publication by Messrs. E. Sanderson & Co., of Milwaukee:

To the Minnesota State Millers' Association, in Convention:

GENTLEMEN:—We desire to call your attention to a matter in which all of us are

more or less individually interested, viz: The several unjust conditions and restrictions forced upon shippers by the forms of bills of lading now used by nearly all transportation lines doing an export business.

We believe a united and vigorous effort on the part of millers and shippers would result in obtaining from all transportation companies a uniform bill of lading, the conditions of which would be assented to by, and binding upon all parties thereto; and not like the present, which contain conditions that have been declared illegal, and others that are manifestly unjust to the shipper, by the acceptance of which he at least tacitly assents thereto.

Among the most prominent are perhaps the following:

1st, The condition, "wherein the transportation companies claim exemption from damage by detention or delay while in transit." This clause is so manifestly unjust that no bill of lading ought to be accepted containing it.

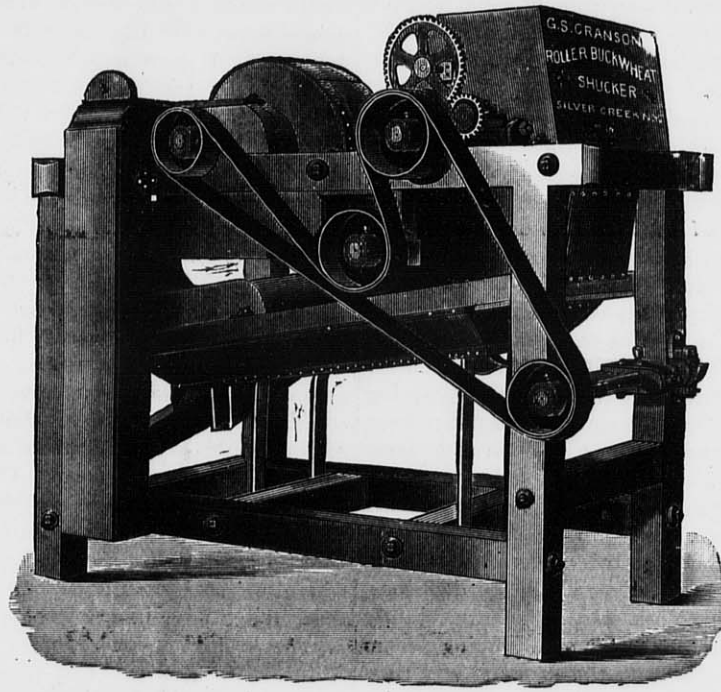
2d, The clause or condition in a through bill of lading which seeks to hold liable only

4th. In case the property would be obliged to go by the route indicated in the bill of lading, shippers would be enabled to secure more advantageous averages, but so long as the transportation companies are allowed to send by any route they may elect, the insurance companies will confine themselves to the hazard of a total loss only, or a general average.

The transportation companies may claim the contingency of shipping by "other lines" is a remote one, it is, however, a risk, and one the shipper should not be called upon to assume.

Within the last two years, we have had two cases wherein the property was thus diverted, on one of which there was a marine loss; the English adjusters, very properly, decided that the insurance certificate, as it read, was not liable, and refused to pay.

We trust your convention will give this matter the consideration its importance demands, and take such action as you may deem advisable to remedy the evils complained of. We would suggest the appointment of a committee, who will investigate



CRANSON'S SILVER CREEK ROLLER BUCKWHEAT SHUCKER.

the particular carrier in whose possession the damage occurs. This would seem, at first glance, very plausible and necessary, to enable the different companies in the line to protect themselves from each other, but on the other hand, it allows a responsible railway or transportation company to have irresponsible or mythical connections, against which there is no recourse if any damage occurs while in their control or possession.

If we are not mistaken, it has been decided that the railway or transportation company issuing a bill of lading is the responsible party, and all connecting lines are jointly liable. If so, there is no necessity for inserting such a condition, which only forces the shipper at great expense to maintain suits against foreign companies, who plead they do not know the shipper, but contracted with the RAILWAY COMPANY, from which they received the property.

In the case of Bruce & Wilson, Glasgow, vs. Allan Steamship Line, on trial in Glasgow, the defense took very strong grounds that the above conditions were a complete waiver to their liability in the premises.

3d, However, the most dangerous surrender of our rights, and one, too, that many shippers undoubtedly overlook, is the condition which allows property to be carried by any route or line the transportation company may elect, and reads, "changes may be made in, and parts of the property may be carried or forwarded by different means, or routes of transportation;" others read, "and liberty to ship by any other steamship or steamship line."

Others again agree "to ship by steamship of equal rate of insurance to that named," in the bill of lading—this concession however, few make, and it is an important question to be considered in this connection, whether this condition, afterwards inserted, does not vitiate the insurance? It can be readily seen, that to be properly insured under such a bill of lading the certificate should read, "by steam," or, "by any other steamer or steamers." These conditions but few insurance companies will entertain, and if they do will charge an extra rate, which results in a higher rate of insurance, and also limits the shipper in the choice of insurance companies.

and report at the next annual meeting of the National Association.

Yours truly,
E. SANDERSON & Co.

WHAT THE SECRETARY OF THE ILLINOIS MILLERS' ASSOCIATION HAS TO SAY TO ILLINOIS MILLERS.

To the Illinois Members of the Millers' Association:

"It is about time that we should have again a confidential chat on the situation. Unless I call for an assessment occasionally, you might think that the whole thing had gone to sleep, but let me assure you the Association is wide awake.

The Denchfield suit will be decided by the United States Supreme Court this spring yet, and the defeat of it is a certainty, because the United States Supreme Court is scrutinizing all the re-issues of patents very closely. A fraud similar to the Cochrane iniquity is now almost an impossibility, thanks to the glorious fight the Association made against it.

The Downton process patented case will be decided by the United States Supreme Court this spring and even if declared valid will make very little difference to the members of the Association, as we have a contract with Mr. Downton which insures to the members only nominal penalties for infringement.

A serious row is threatened on account of the Dust Collectors. However, the sub-executive committee of the National Association is now arranging with the leading manufacturers, for heavy bonds with unquestionable good security, that all the purchases of such machines shall be defended out of the proceeds of these bonds; the more machines these concerns may sell the higher additional bonds they obligate themselves to furnish. It may take four or six weeks yet before all the details are worked out, meanwhile we advise all members to refuse payment for these machines unless they get unquestionable good security for a clear title.

Let me entreat the Association to use ordinary business caution in purchasing mill machinery of any description. Buy only of good, responsible dealers, even though you may have to pay a few dollars more.

There are a number of irresponsible firms springing up all over the country, manufacturing and selling all kinds of mill machinery, regardless of the rights of patent owners. If millers choose to patronize such institutions they will, most assuredly, get themselves into trouble before long, and most assuredly the Association will not, and cannot, defend suits arising out of such carelessness. Please pay full attention to this.

There is an instinctive feeling all over the country that some fine morning the thousand and one patents on Roller Mills will get the milling fraternity into trouble without end. The Executive Committee has been canning the horizon for a good while, and the policy of the Association will be to make common cause with anyone who is a bonafide possessor of "bed-rock" patents affecting Roller Mills. The so-called Ganz patents, controlled by parties in Buda-Pesth, have, within the past few weeks, been bought up by parties in this country, who think they have more than a gold mine or two. You may rest perfectly easy with the assurance that the Executive Committee of the National Association lays awake of nights watching all these manoeuvres, and that no trap will be sprung on the Association. If any man proves himself to have a real good thing, we will call him brother, and lock arms with him; if he only has a bulldozing scheme we will stand on our dignity. There are other matters and patents engrossing our attention. We will not enlarge on them now. If they should become troublesome it will be time enough then to bother you with them.

The National Association is now arranging with a patent law firm to watch all new patents ground out by the patent office from week to week, which might affect the milling interest, and in this way we hope to be constantly posted. At the same time several Congressmen are working, at our instigation, to get a law passed by which an innocent purchaser will be protected from blackmail, and we have the assurance, by a prominent member of Congress, that such a law will undoubtedly pass, after having failed to get the requisite majority in either one or the other House during the last three or four years.

To keep all this machinery in good working order it takes dollars and cents.

The National Association, assembled at Cleveland last January, ordered an assessment of \$10 per run, being equal to 35 barrels capacity in 24 hours; half of the assessment, or \$5 per run, payable this month, the other half in September. Please remit, at your earliest opportunity, \$5 for every 35 barrels of your capacity per 24 hours.

During the absence of C. H. Seybt (secretary and treasurer) in Europe, you will please remit to and correspond with Henry Schurmann, assistant secretary, Germantown, Clinton Co., Ill. C. H. SEYBT, Sec'y and Treas.

Highland, Ill., March 20th, 1883.

A WORD ABOUT MILWAUKEE CEMENT.

MILWAUKEE CEMENT is now conceded to be the best natural hydraulic cement in the American market. In uniformity of manufacture, reliability and ultimate strength, there is no superior cement made from the natural rock, in this country or Europe. The works are among the largest, most modern and most complete for the perfect manufacture of hydraulic cement of this class in any part of the world. Its patrons include the national government, many of the state governments, the largest railway companies and many of the most expert engineers and architects of the United States. Of the large quantity shipped by the company the past year not one barrel was rejected because of inferior quality. The capacity of the works is now nearly half a million barrels per annum.

We acknowledge with pleasure a delightful visit from D. G. Tepper, Esq., now editor of the *Millers' Journal* of New York. Mr. Tepper was formerly editor of the *Millers' Gazette*, London, and became thoroughly acquainted with the trade on the other side. He has, however, we believe, made up his mind to settle down here permanently, and be "one of us." He is now visiting various points in the West, to become personally acquainted with those engaged in the industry he helps to represent journalistically.

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ANNOUNCEMENT:

WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

ANNUAL MEETING OF THE WISCONSIN STATE MILLER'S ASSOCIATION.

OFFICIAL CALL.

Secretary's Office,
 Milwaukee, March, 27, 1883.

The Annual Meeting of the Wisconsin State Miller's Association will be held in the parlors of the Plankinton House, Milwaukee, Tuesday, April 10th, at 2 o'clock, p. m., for the purpose of electing officers for the ensuing year, and transacting such other business as may be brought before the meeting.

A full attendance is desired.

S. H. SEAMANS, Sec'y.

MINNESOTA MILLERS' ASSOCIATION.

OFFICIAL CALL.

To the Members of the Minnesota State Millers' Association:

GENTLEMEN: You are hereby notified that a special meeting of this Association will be held at the Nicollet House, in Minneapolis, on Tuesday, the 10th day of April, A. D. 1883, at 10 o'clock in the forenoon of said day. Business of importance made necessary by the action of the executive committee of the Millers' National Association, held at Cleveland, O., Jan. 31, 1883, will come before us. Also the election of officers of this Association, as well as all other business that would have properly been considered at our annual meeting in December last (had not that meeting been adjourned,) will be considered and disposed of. Hence a full attendance is both desirable and important.

E. V. WHITE, Chairman Ex. Com.

W. P. BROWN, Pres. Minn. State Millers' Ass'n.

Minneapolis, March 19, 1883.

WHEAT AND FLOUR EXPORTS.

The following figures are condensed from official sources. During the month of February 1883, there were exported 5,666,035 bushels of wheat, worth \$6,491,026, and 902,633 barrels of flour, worth \$5,368,136. In February 1882, there were exported 5,318,183 bushels of wheat, valued at \$6,222,841, and 526,499 barrels of flour, valued at \$3,117,854. The total value of exports of grain and flour for eight months ending, Feb. 28, 1883, was \$149,431,142, against \$135,296,632, during corresponding time in 1882.

DANGEROUS PRACTICES.

F. B. Allen in the *Locomotive* says: When a boiler gives signs of distress, by unusual leaking, or by other well-known indications, it must at once and with the least possible disturbance be put out of service until it can be thoroughly examined by a competent inspector and the nature of the defect determined. The average water tender puts a heavy feed on the boiler and gets a ladder with which he may climb up and watch the spread of the leak. In opening the flue doors in the setting, to afford him the necessary view, unwittingly, no doubt, he permits a stream of cold air to sweep the boiler bottom, which adds another important element to its destruction, and perhaps his own. We would as soon think of entering a powder magazine with a lighted cigar as to do either of these things at the time or under the circumstances we have described.

[From the Milling World.]
PROPERTY IN MILL POND ICE.

BY MYRON BLY.

The question of the legal ownership of ice on mill ponds must be an especially important one to mill owners of every description, because nearly all the leading cases involving adjudication of the right of property in ice refer to disputed rights in mill ponds. When ice began to assume a commercial value the courts were soon called upon to decide conflicts over its ownership. But the question was new; the judges had no English precedents to guide them, because there had never been any necessity of deciding the question in England. At first there was a good deal of groping about and stumbling, but the decisions have now approached an approximate uniformity. The reasoning of the opinions, however, is very contrary and diverse. It would have been better for the courts in this case to have followed the course of the distinguished Lord Chancellor, who declined on general principles to give reasons for his decisions, stating that the latter were usually right, but his reasons were apt to be wrong. Some of the conclusions which have been reached are as follows:

New York—There can be no difference as to the rights of a riparian owner growing out of the water, whether liquid or congealed.

Illinois—Manifestly different considerations apply to water in a running stream when in a liquid state and when frozen.

Indiana and Illinois—When water has congealed and become attached to the soil, like any other accretion thereto, it becomes a part of the realty. It is real property.

Michigan—Ice is personal property. It is only a portion of the running water become fixed by freezing, and draws nothing from the land, and gets no more support from it than a floating log.

Connecticut—The miller may be injured by the removal of ice, because the water supply is limited in the winter time, and ice often liquifies during winter thaws and becomes available, and it also retards deeper freezing and a further lessening of the water.

Massachusetts—The cutting and carrying away of any quantity of ice would not inflict injury by diminishing the quantity of water which would come to the mill. It must be cut in the winter. It melts in the early spring and goes to form the spring floods when there is a surplussage of water. When a dry season came around there would be just as much water in the pond as though no ice had ever been cut.

Notwithstanding this diverse reasoning, there is but little diversity in the decisions. The first New York case, to be sure, bluntly held that as the water of a running stream could never become the property of a riparian owner, even though he owned both banks, therefore the ice could never become his property so that he could sell or dispose of it. This was put upon the theory that the riparian owner had no right to direct the water, and had no interest in the stream beyond the use of the flowing water. All this was upset by a later decision in the same state, holding that the water might be diverted for domestic purposes and for stock, and in fact, might be diverted to any extent, which did not impair the beneficial enjoyment of the stream by those below, and having a property in the water to this extent, the riparian owner had, therefore, an absolute property in the ice. This right of property in the ice possessed by the riparian owner, is now perfectly established, whatever the reasons the courts have advanced for it. The same rule applies generally to streams that are navigable. There may be exceptions in the case of navigable streams, however, but as millers are not, as a rule interested in such waters, it will be sufficient to say that the exceptions might arise in these states which do not adopt the common law rule that the title of the riparian owner extends to the middle of the stream wherever the tide does not ebb and flow, but hold, on the contrary, that if the stream is navigable, he gets no title to the bed. In such a case, it might be held that the right to cut ice vested in the public at large, if access to it could be obtained without trespassing on the shore. The legal ownership of ice, on mill ponds, then, may be briefly stated in the following manner:

If the mill owner possesses title to the bed of the pond, or if he has acquired by purchase, or by prescriptive use, the legal right to flow the land, the ice which forms on it is his own property.

He may cut it himself or sell it to others, and it is not necessary that he should own the shores if he owns the bed, or has the right to

flow it. It will be seen that he who ponds waters is recognized as having a special property in them. Without this recognition, if a miller did not own the bed of the pond, but simply had a right to flow, the ice might be the property of those who held the title to the bed. It has been distinctly decided that where one grants to a miller the right to flow simply and reserves the fee, he nevertheless part with his right to the ice. It has not been so clearly decided that where the right to flow has been acquired by prescription or long continued use, the holder of the fee loses his right to the ice. But this must inevitably be the case. Prescription implies that a grant has been made. Moreover, it has decided that where the right to flow land has been acquired by prescription, the mill owner has an interest in the ice which entitles him to have it remain on the pond, and he can prevent others cutting it. If this is so, then it is only a question between the miller and the lower riparian owner, and the latter cannot prevent the cutting of the ice by the miller.

The whole subject is a very interesting one, and one about which there has been much uncertainty, but at the present time the rules laid down above may be relied upon as correct.

(Translated for THE UNITED STATES MILLER.)

ON THE DEVELOPMENT OF THE MILLING INDUSTRY.

According to Pliny, the invention of milling is accredited to Ceres, but a Spartan legend accords this honor to one Myles, a Lelegian. The fact that one of Zeus' names is Myleus, "the miller," furnishes incontestable evidence for the great antiquity of the process for making grain into flour. In Egyptian wall paintings there occur everywhere mortars and sieves, the only implements in use by the ancients for making flour. The Indians and Nubians pulverized the grain by grinding it between two stones and this method finally gave rise to the employment of millstones. Moses and Homer already mention mills with two stones. These early millstones, however, were very small, as shown by those found at Abbeville, which are only about 28 centimeters in diameter. They are still in use in the Orient and in China. Also in Pompeii millstones and whole mills have been discovered, but the stones are larger. The lower stone, on a conical projection faced with iron, carries the upper stone, which resembles an hour-glass, by reason of two conical depressions, their apexes meeting in the center. The first mills driven by water power are described by Vitruvius and, since that time, they have been adopted all over the world. For reasons, which we have mentioned in a previous article, the milling industry remained stationary for centuries, and it was reserved for America, to give the first impetus toward improved methods in milling.

As early as the commencement of this century, there were a number of mills established in Pennsylvania and on the Mississippi, far superior to the old German mills. In Europe nothing was known of these new methods, employed among the American millers, as far back as 1781, since the first successful steam mill was established in London, in the year 1784. In France, however, no steam mill was built until 1826. In Germany there were, in 1825, mills operated by steam in several places.

At first it was generally supposed that an extensive flouring mill could only be carried on successfully by the use of steam, but this opinion has since been proved erroneous, and many large establishments now depend entirely on water for their power.

The next great improvement was reached by the introduction of a better material for stones, which brings us to the time of the prevalence of French Buhr-stones from La Ferté and the general introduction of American apparatus.

The first attempt to use rollers for milling purposes is said to have been made by Helfenberger of Rohrschach, some time between 1820 and 1823. A mechanic by the name of Bollinger improved this roller-mill, which consisted of three corrugated rollers, two of which were placed side by side and the third below these. They made respectively 30, 40 and 48 revolutions and had consequently differential speed, so that the grain was not only crushed, but ground. A von Mueller of Warsaw, also invented a roller-mill, which is said to have been still better than Helfenberger's. A large number of mills on the roller system were erected in 1834, by Engineer Sulzbacher, in which the rollers were arranged in three pairs placed horizontally above each other in such a manner, that the grain always fell from the uppermost on the

middle pair, and from these on the lowest pair. The rollers ran with a speed of 350—450 revolutions. In Mayence and Milan, these rollers were made of cast iron with flutes of steel, arranged so that they could be removed when worn out. It was, already at that time, conceded that better results could be obtained by the use of rollers for milling, but, nevertheless, in all the places, where rollers have been employed in the thirties, such as Mayence, Leipsic, Munich etc., they were afterwards discarded, and their place again supplied with stones, because the poor quality of the costly materials, out of which rollers were made, caused them to wear out very quickly, a calamity which then appeared fatal to the otherwise promising innovation.

First with the unexpected and great improvements in the manufacture of iron, and especially steel was it possible to obtain a material for mill rollers, which answered all requirements, and from the time when it became possible to produce cast steel of excellent quality at a comparatively low price, we may date the firm establishment of the roller-mill system.

Finally Wegmann found a new roller material in porcelain and, at the International Exhibition of Vienna, in 1873, showed that he had reached remarkable results with his rollers in Naples. He thereupon commenced making experiments for this purpose, in Budapest, and there his system was adopted by the large firm of Ganz & Co, but modified so as to employ rollers manufactured by their peculiar process of hard casting, instead of porcelain. This firm have taken a prominent part in the entire revolution of the milling industry and development of the world-renowned Austro-Hungarian system of milling.

From Europe the rollers were introduced into America, and the first rollers were brought to this country by Oexle from Budapest. With usual enterprise, however, American industry at once, seized upon the manufacture of rollers, and it is not to be denied that the results obtained here in their production, within the last two years, have been so favorable that the millers of Austria-Hungary, who until recently were acknowledged as the leaders of the world in gigantic milling on scientific principles, have commenced looking for their laurels in alarm. In milling, as well as in all other branches of human industry, America is and will continue to be a formidable rival of the old world.—*Die Mueller-Stube*, (Vienna.)

THE EFFICIENCY OF MODERN TURBINES.

BY ROBERT H. THURSTON.

[From the President's Annual Address before the American Society of Mechanical Engineers.]

The mechanical engineer has open to him as his exclusive province one department which is as yet only partially developed in practice though well advanced in theory. I refer to that of hydro-mechanics, and especially the utilization of water power. Although one of the earliest opened by the old Greek engineers, it has been one of the latest developed. Archimedes, Ctesibus and Hero were familiar with the principles of fluid pressure; Torricelli, Pascal, Newton and Bernouilli developed the fundamental principles of hydro-dynamics; Du Buat, D'Aubuisson, Prony, Eytelwin, and above all others, Darcy, supplied experimental data; but it has been reserved for our own generation to apply the knowledge so early acquired to the production of efficient hydraulic engines. But a few years ago the vertical water-wheel, as constructed by Fairbairn for moderate and for high falls, and the undershot wheel of Poncelet, were the standard wheels in all countries, notwithstanding their cumbersome size, their slow movement, and the great cost involved both in their own construction and in that of their machinery of transmission. Their efficiency was thought high, although rarely exceeding 75 per cent. These wheels have had their day, and nothing is likely to occur to save the whole class from ultimate disuse. The turbine—introduced in an effective form by Fourneyon a half-century ago, and especially in the late forms of Fontaine, Henschel, Jonval, Schiele, and others abroad, and by Boyden and his successors in the United States—has become the only water-motor in general use. This small, cheap, quick-running wheel has completely displaced all the older forms, whether overshot, undershot, or breast wheels. The three principal types—parallel, inward flow, and outward flow—are all in use and doing good work. In Europe, they are all made by good builders, as here; but the tendency seems to be, in the United States at least, to introduce most generally another and peculiarly American type—the inward

and downward flow wheel—as illustrated in the wheel built by Risdon. In efficiency, notwithstanding the comparative neglect of these motors by scientific investigators, there has been a steady and important gain during late years. The improvements which have been *fell out* by makers, working often in the dark—for few builders claim to understand the principles of their art, and no two even agree in their statements of the principles underlying their practice—have resulted in a gradual elevation of the standard, until, to-day, a wheel which, under favorable circumstances, cannot exhibit an efficiency of 80 per cent., must drop into the background. I have been asked to certify a trial, giving, as claimed, 95 per cent.; but that figure could, I am sure, only be attained by chance, if at all, when all conditions conspired in its favor. But wheels are, I have no doubt, doing work by the day and by the week at 80 per cent. It may be said that Boyden did as well a generation ago. True, but only with large wheels, built as carefully as the chronometer is made, and fitted with polished buckets and diffusers, and tested under conditions purposely made the best possible. To-day, our builders of turbines give their wheels such exact proportions, and take such care in the ordinary work of the foundry, that they obtain these high figures from wheels almost directly from the sand. So far has this change gone, that our theory of the turbine, as modified by friction, requires careful revision. Accepting the older coefficients for friction and losses of energy, it will probably sometimes be made to appear from experimental trials that the wheels of our best makers are a trifle better than perfect. It would seem from figures sent me that friction in a well-formed wheel becomes partly a means of transfer of energy from water to wheel, and that the loss of efficiency due to that element is much less than has been supposed. In some of the later wheels losses of energy due to eddies occurring within the flowing mass have been reduced to such an extent as to considerably improve their performance. In the regulation of the turbine an excellence has been attained that is thoroughly satisfactory in some cases, and the best wheels have been found to give an efficiency at half and three-quarters gate, nearly equal to the best at full gate. As the efficiency at part gate is often more important than at full gate, it is easily seen that this means a vitally important gain.

HISTORY OF THE STEAM ENGINE.

The history of the "growth of the steam engine," as told by Prof. Channing Whitaker in a recent lecture delivered before the Rhode Island Association of Steam Engineers, is quite an interesting one. According to Prof. Whitaker the steam engine existed as a toy from 200 years before the Christian era until about 1690, or for nearly 2000 years. How much earlier it was used as a toy is not known. A useful steam pumping engine was introduced at Raglan Castle, in England, not much later than 1628. The steam engine became a useful machine because it was found capable in the hands of Savery, Newcomen and Watt, in England, in draining the rich mines of Cornwall and other districts. The inventions of both Savery and Newcomen were preceded by those of Denys and Papin, who invented a method of raising water not by means of steam, but by means of air. Thomas Newcomen, an iron founder, gave himself over early to the idea of supplanting the air pump with an invention of his own. His plan was: To fill a closed vessel of sufficient strength with steam of the atmospheric pressure, and afterwards by condensing the steam to cause a vacuum to be formed in the chamber into which the water would flow through a communicating pipe from the well beneath because of the atmospheric pressure upon its surface. During the same period Capt. Savery, a wealthy gentleman, became interested in the same kind of an invention. He devised and patented, in 1698, an invention for raising water by steam. He also published a treatise called the "Miners' Friend," in which he called the attention of owners of submerged mines to his new invention. *** This new engine of Savery's delivered water at a height of nineteen feet above the surface of a well and made seven and a fourth strokes per minute, each stroke filling a receiver 2 feet in diameter and 7 feet high to a height of six feet. The work done was the raising of eighteen and three-fourths cubic feet of water per stroke through a height of nineteen feet, which was equivalent to raising 136 cubic feet per minute to the same height. The consumption of coal was 3,200 pounds in twenty-four hours, or about one and three-fourths bushels of eighty-four pounds per

hour. Each bushel of coal would therefore raise about 5,500,000 pounds through one foot. This is less than one-fifteenth part of the work performed by a modern pumping engine.

About the year of 1712 Thomas Newcomen, ironmonger, and John Cawley, glazier (whose names are associated as the makers of the first engine that ever worked a pump,) put up an engine at Wolverhampton which acted successfully. The progress made was very rapid and it is recorded that in the year 1737 there was a pumping engine of the Newcomen construction working a succession of pumps, each 7 inches in diameter and twenty-four feet apart and making six feet stroke at the rate of fifteen per minute, whereby water was pumped from cistern to cistern throughout the whole length of a shaft 267 feet deep, by steam at or near the atmospheric pressure. Newcomen's engine was strong enough and well enough built in all of its parts to be practically successful, but it was not thoroughly well designed and the next important improvement came when Smeaton, a skilful engineer and designer, improved the proportions and modified materially the details of Newcomen's design. In 1775 Smeaton erected an improved Newcomen engine at the Chase-Water mine in Cornwall. This had a cylinder 6 feet in diameter, with a 9-foot stroke, and was capable of producing 76 horse power. It is curious to note that the growth of the steam engine has reduced its size so far that a high-speed engine which would produce the same power to-day as this enormous engine of Smeaton's did would have a cylinder only 9 inches in diameter and 16 inches stroke, instead of 72 inches in diameter and 108 inches stroke; or, to state the proportion in another way, the volume of the cylinder in which the power is produced would be only 1-216 part of that of the corresponding cylinder of the improved Newcomen engine. Smeaton's engine was the largest in existence at the time of its construction. It worked successfully for a few years and was then altered by James Watt to his improved system. In 1765 Watt began to repair a model of a Newcomen engine belonging to the natural philosophy class in the University of Glasgow. This led to a series of improvements which have made his name so famous. *** Probably no person ever introduced more or more important improvements in a single machine than Watt did in the steam engine. Watt invented the double-acting steam engine, in which the steam acts on each side of the piston alternately.

The concluding remarks of Prof. Whitaker were concerning modern engines, and especially those built in this country.

HOW THEY PLAY THE PIANO IN NEW ORLEANS.

"I was loafing around the streets last night," said Jim Nelson, one of the oldest locomotive engineers running into New Orleans, "and as I had nothing to do I dropped into a concert and heard a slick-looking Frenchman play a piano in a way that made me feel all over in spots. As soon as he sat down on the stool I knew by the way he handled himself that he understood the machine he was running. He tapped the keys away up at one end, just as if they were gauges and he wanted to see if he had water enough. Then he looked up as if he wanted to know how much steam he was carrying, and the next moment he pulled open the throttle and sailed out on the main line, as if he was a half an hour late.

"You could hear her thunder over culverts and bridges, and getting faster and faster, until the fellow rocked about in his seat like a cradle. Somehow I thought it was old '36' pulling a passenger train, and getting out of the way of a 'special.' The fellow worked the keys on the middle division like lightning, and then flew along the north end of the line until the drivers went around like a buzz saw, and I got excited. About the time I was fixing to tell him to cut her off a little, he kicked the dampers under the machine wide open, pulled the throttle away back in the tender, and Jerusalem, jumpers! how he did run. I couldn't stand it any longer, and yelled to him that she was 'pounding' on the left side, and if he wasn't careful he'd drop his ash pan.

"But he didn't hear. No one heard me. Everything was flying and whizzing. Telegraph poles on the side of the track looked like a row of corn stalks, the trees appeared to be a mud bank, and all the time the exhaust of the old machine sounded like the hum of a bumble bee. I tried to yell out, but my tongue wouldn't move. He went around curves like a bullet, slipped an eccentric, blew out his soft plug, went down grades fifty feet to the mile, and not a confounded brake set.

She went by the meeting point at a mile and a half a minute, and calling for more steam. I knew the game was up.

"Sure enough, dead ahead of us was the headlight of the 'special.' In a daze I heard a crash as they struck, and I saw the cars shivered to atoms, people mashed, mangled and bleeding, and gasping for water. I heard another crash as the French professor struck the deep keys away down on the lower end of the southern division, and then I came to my senses. There he was at a dead stand-still, with the door of the fire box of the machine open, wiping the perspiration off his face, and bowing at the people before him. If I live to be a thousand years old I'll never forget the ride that Frenchman gave me on a piano."

WHEAT POSSIBILITIES IN THE FAR NORTH.

BY W. J. ABERNATHY, ST. PAUL, MINN.

In an article published a good many years ago, by a leading writer on agricultural matters, he makes this statement: The natural and permanent wheat region of the country lies between latitude 33 deg. and 43 deg. North. In other words, the wheat belt of the United States, according to this authority, lies between a line drawn through southern Arkansas on the South, and northern Iowa on the North. But actual experience soon demonstrated the fact that the northern limit was much above this; indeed, the line has gradually been pushed poleward, until to-day it reaches nearly to the Arctic circle. The conditions necessary for the development of the wheat plant have been very carefully studied by scientific men, and the laws which govern its growth are now well understood. It has been discovered that the plant requires from 100 to 150 days from the time of sowing the seed to the harvesting of the crop. From the time of heading out until maturity, the average period in the United States is from fifty to sixty days, and in England from fifty to seventy days, according to the amount of dry weather and sunshine.

The fact has been ascertained, also, that the average temperature during the summer months must not fall below 60 degrees Fahrenheit, or during the average period of its growth below 56 degrees. If this temperature is not attained the grain will not ripen and the crop is a failure. In the far northern latitudes of the American continent, nature is wondrously kind to the farmer. Way up in the Saskatchewan Valley, and further north to the system of rivers which flow into the Arctic Ocean, the conditions of the temperature named above are found to exist. Summer comes on all at once, and from the time the seeds sprouts until it is matured, there is hardly a moment's cessation of heat or growth. The transformation from cold to hot here is one of the marvels of the country. The days are immoderately long, the twilight shadows being prolonged to 10 or 11 at night. In consequence, wheat will mature in about 100 days and barley in 90, or, as it will be seen, in a much less period of time than in the United States. At Cumberland House, latitude 53 deg. 57 min., on the Saskatchewan River, in data which we have, wheat sown May 8, ripened and was cut the last of August, the mean average temperature being 61 deg. 8 min. At Fort Frazer, latitude 54 deg. 30 min., wheat matured in about the same period. At Fort Francis, in the Rainy Lake District, latitude 48 deg. 36 min., wheat sown May 1 was reaped the last of August. From Prince Albert, on the north fork of the Saskatchewan, we received last year a number of samples of beautiful wheat grown at that place. But this locality is near by compared with that still further to the northwest where this grain is grown. At Fort Vermillion, latitude 58 deg. 24 min., all kinds of garden stuff are grown. Barley sown on May 8 ripens in early August, and wheat in a little longer period.

At Fort Chipweayan, at the entrance of Lake Athabasca, latitude 58 deg., 42 min., from a report to the Canadian Government by a special commissioner sent to that section, we learn that wheat ripens every year without failure, and that he actually saw and handled samples weighing 68 pounds to the bushel. But Fort Simpson, 61 deg. north, bears off the palm. This is at the Hudson Bay Company's post. Barley ripens there every year, and wheat—so says the factor of the post—four years out of five. Fort Laird, however, in the same latitude, is equally entitled to credit, not only wheat and barley being grown there regularly, but garden vegetables as well. The factor at this post says "that nearly every year in longitude 143 degrees west, and under the Arctic circle, barley is sown and matures." A number of samples of wheat from these high latitudes

were sent to the Chamber of Commerce of St. Paul by the United States Consul at Winnipeg a year ago this winter, and through the kindness of the secretary of the Chamber they were placed in our hands for experiment. Samples were also received direct from Fort Vermillion, from the Hudson Bay Company and the Church Missionary Society at that post. All the samples were hard and dark colored, denoting a large proportion of gluten. They grew vigorously and matured early, as do all the northern wheats brought south.

So it seems there are almost limitable wheat fields to the north of us yet unnoticed. Competent authority estimates the area of this section, embracing Manitoba, Saskatchewan and Peace River countries, at about 200,000,000 acres, nearly one-half of which is arable land, the other portion being suitable for pasturage. Whether the district will ever be settled or not depends on the "grit," if we may use the word, of the Canadians.

The Hudson Bay Company has had posts established all over British North America for a great many years, which proves that people can and do live there.

The Commissioner referred to above, who made a thorough exploration of the district, says that he was on the Peace River, which flows into the Arctic Ocean, all through the month of October, and that the constant record of the month was "warm sunshine, west wind, balmy atmosphere, and skies of the brightest blue." Even as late as Oct. 15, the thermometer was 48 degrees at daylight and 61 degrees at noon in the shade; and, within the foothills of the Rocky Mountains, he picked three species of flowers as late as the 26th of the month. Capt. Butler, in his "Wild North Land," speaks of the whole hillside at St. Johns being blue with anemones as early as April 22. More remarkable still is the statement that at a station on the Battle River, one of the tributaries of the Peace River, Indian corn has been successfully grown for several years in succession. So it is evident that there are yet untold possibilities and opportunities in the domain of agriculture on the American continent.

A CURE FOR SCIATICA.—A correspondent, writing to London *Vanity Fair*, says: "A cure for neuralgia and sciatica—and, as I am told, an unfailing one—is too valuable not to be recorded. An English officer, who served with distinction in the war with Napoleon, was once laid up in a small village in France with a severe attack of sciatica. It so happened that at that time a tinman was being employed in the house where he lodged, and that this tinman, having been himself a soldier, took an interest in the officer's case, and gave him the cure, which, in this instance, succeeded immediately and forever, and which I am about to set down. It is at any rate so simple as to be worth a trial. Take a moderate sized potato, rather large than small, and boil it in one quart of water. Foment the part affected, with the water in which the potato has been boiled, as hot as it can be borne, at night before going to bed; then crush the potato and put in on the affected part as a poultice. Wear this all night, and in the morning heat the water, which should have been preserved over again, and again foment the part with it as hot as can be borne. This treatment must be persevered with for several days. It occasionally requires to be continued for as much as two or three weeks, but in the shorter or longer time it has never yet failed to be successful."

THE editor of the New Genesee *Farmer* has lately witnessed an experiment of driving nails into hard seasoned timber, fairly dried. He says that the first two nails, after passing through a pine board, entered about one inch, and then doubled down under the hammer; but on dipping the points of the other six or eight nails into lard, every one was driven home without the least difficulty. Carpenters who are engaged in repairing old buildings sometimes carry a small lump of lard or tallow for this purpose on one of their boots or shoes.

THE *Lancet* says: "It is high time that attention was directed to the subject of narcotics generally, and the use of chloral and bromide of potassium in particular. Incalculable injury is being done, and public opinion is being grievously misled by the tolerance given to the use of 'sleeping draughts,' falsely so-called. In regard to this matter and that of the reckless use of hypodermic injections of morphia, the profession should seek to form a deliberate judgment, and gravely deliver itself. At the present moment we are under a heavy responsibility, which it is idle to deny and vain to disown."

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E. HARRISON CAWKER, EDITOR.

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For estimates for advertising, address the UNITED STATES MILLER.

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MILWAUKEE, APRIL, 1883

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY for 1882, was completed, ready for delivery February 1, 1882.

It shows that there are in the United States 21,356 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 388; Arizona, 17; Arkansas, 234; California, 209; Colorado, 52; Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 3; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 220; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennessee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia, 404; Wisconsin, 780; Wyoming, 3; Total, 21,356.

The directory is printed from new Burgeois type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances. This work is indispensable to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy, on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

The LOUIS B. FIECHTER MANUFACTURING Co., of Minneapolis, has become incorporated with a capital stock of \$50,000.

THE MILWAUKEE DUST COLLECTOR MFG. CO. report business to be exceedingly good. They are running their works to full capacity.

THE Flour and Grain and Produce Exchanges at Pittsburgh, Pa. have consolidated, and it is thought that the results will be highly beneficial to the trade.

We had a pleasant letter from R. L. Downton, and Tom. Miller, Jr., of St. Louis, the other day, and they say, that business was never better with them, than at the present time.

C. E. Wenborne, Esq., publisher of *The Milling World*, *The Lumber World* and the *American Tanner*, paid us a short visit, March 26. Bro. Wenborne reports everything O. K. all along the line.

DULL—duller—dullest is what millers all through the North-west say in regard to business at the present writing. It also seems probable, for a variety of reasons, that business will not be particularly good again for millers before May 1st.

THE most powerful telescope ever built is now being constructed for the Russian Government by an American firm at Cambridgeport, Mass. The object glass is 30 inches in diameter. The Russian expert, Dr. Otto W. Struve, has recently arrived in this country to test it.

C. B. Shove Esq., Secretary of the Miller's & Manufacturers Ins. Co., of Minneapolis, made us a brief call March 6th. He reports his Company to be in excellent condition and doing a prosperous business. The risks of the Company are principally on flour, saw and planing mills, and machine shops and factories.

WE have received from the publishers, Messrs. Harper & Brothers of New York, "Haswell's Engineers' and Mechanics' Pocket Book" by Chas. H. Haswell, C. E. It contains a mass of information in a very condensed shape on the following subjects; weights and measures; rules of arithmetic; weight of materials; latitude and longitude; cables and anchors; specific gravities; mensuration; me-

chanic; friction; aerostatics; hydraulics, hydrodynamics, dynamics, gravitation; animal strength, limes, mortar and cements; wheels, heat, water, gunnery, sewers, combustion, steam and steam engines, dimension of steamers, mills etc., and many other subjects too numerous to mention. The price of the work is \$3.00. It is a standard work and every practical man should own a copy.

ACCORDING to Census Bulletin No. 304, the highest value of annual product, is awarded to the "Iron & Steel" industry amounting to \$551,543,109; next in order comes "Flour & Grist mill products" valued at \$505,185,712. So according to official figures we can say, that the "Flouring Industry" is second only in importance to any in the country.

A couple of changes in names of Milwaukee mills, have been made recently. The Milwaukee Milling Co's Mill is now called "The Jupiter Mill" and the former "New Era Mill" is now called the "North-Western Mill." The former is operated by Stern & Wohrab, and the latter by F. Schleisinger & Co.

THE Milwaukee Dust Collector, Co., deserve great praise from all millers for the course they have taken to protect millers using their patented machinery. They have offered to file a bond with the Secretary of the Miller's National Association in the sum of \$50,000, to protect millers from all suits for damage for purchasing and using the well known Dust Collector.

SUNDAY, March 25, 1883, Timothy O. Howe of Wisconsin, Post Master General of the United States, died at Kenosha, Wis. The distinguished dead served the people of Wisconsin as Judge and United States Senator for a long term of years in a most creditable manner, and "died in the harness" as the head of one of the most important Government departments, full of honors and full of years.

CAPT. E. W. PRIDE, of Neenah, Wis., the Wisconsin representative of the Jno. T. NOYE MANUFACTURING Co., called on us March 29. He reports business good. He says there is not a miller in Wisconsin so conservative but that he has made up his mind to make some important alterations in his mill. The "very Methusalehs" amongst the millers have acknowledged that the millstone must go, and advise the "boys" to put them in.

The *Century Magazine* for April is full of beautiful illustrations and entertaining letters. The cultured American finds it indispensable. The April number concludes the XXV volume. We have not space to mention the numerous articles contained in this number, but will say that he that hath missed reading "The Capitol at Washington," by Ben Perley Poore, and "The Primitive Fishhook," by Barnett Phillips, has missed a rare intellectual treat.

THE CASE MANUFACTURING Co., of Columbus, O., inform us that they have been building a Centrifugal Reel for six months past, which they have been putting in all the mills they are building and changing over, and that it has proved itself to be one of the very best machines they have ever put on the market. They have not yet advertised their centrifugal or sought to put it generally before the milling public, yet they have filled a large number of unsolicited orders, the results from which are so satisfactory that they intend to add it to their line of specialties. They state that one order includes seventeen of their centrifugals for one mill, six for another, &c.

HOW BUSINESS MEN ARE MADE

The readers of THE UNITED STATES MILLER make the best flour in the world, and are intelligent business men. Many of them have, we presume, acquired their business knowledge mostly by experience, and have found it a slow and costly way. They know and appreciate the value of improvements in making flour and are alive to and in sympathy with progress in general. They will therefore be interested in improvements in making business men. Milwaukee has an institution devoted exclusively to business training. Some of its patrons, former students and graduates, are among our readers, and from personal knowledge and experience will corroborate the statement that the SPENCERIAN BUSINESS COLLEGE makes superior business men, by methods much shorter, cheaper and safer than the old one of hard experience. This college teaches systematically the perfected results of prac-

tical business experience by the most direct and practical means. Its students get in a few months more business knowledge and skill than they could gain in years by experience alone. Upon a sound theoretical basis it carries on a system of business practice and training that is like business in its operations and methods.

Further information can be obtained by addressing the principal of the college, R. C. SPENCER, Milwaukee, Wis.

The *Mechanical News*, N. Y., has, so to speak "put its foot in it." In a recent number it reproduces a page from "*Al Ahram*" (The Pyramids,) published in the Arabic language, in Alexandria. American citizens, the majority of whom are of course well versed in Arabic, will be shocked at the laxity of morals displayed in this extract, which smirches the hitherto clean pages of the *Mechanical News*. The articles therein entitled "The Trip of the Ass to the Bone Yard," and "A Night among the Palm Trees" are absolutely shocking.

The editor of the *News* should either plead his ignorance of pure Arabic or else make a most humble apology to his readers for a mis-application of editorial enterprise.

THE "BISMARCK MILL."

We translate the following from the March number of the *Oesterr. Ungar. Mueller* of Vienna, Austria:

The Case Manufacturing Company of Columbus, O., have recently brought out a newly invented roller-mill, which they have given the name of the "Bismarck Mill." This shows that the name of the great German statesman is recognized even in America as possessing peculiar advantages for making successful inventions known.

The advantages of this mill, which is provided with two pairs of rollers, are as follows:

A strong and well-proportioned iron frame without any wood whatever, exceptionally long bearings of Babbitt metal, a simple and convenient apparatus for regulating the rollers, noiseless working, freedom from dust, easy access to all the bearings for oiling, excellent arrangement of the pulleys, occupying only a small space, positive feed, comparatively low price, and withal unsurpassed capacity, both as to quality and quantity.

A machine, that fulfills all that the manufacturers thus claim for it, cannot fail to push its way into general use among the American millers by its own merits.

RECENT MILLING PATENTS.

The following milling patents were issued from the United States Patent Office, Feb. 27, 1883.

Grinding-mill, Daniel C. Stover, Freeport, Ill.

Wind-mill, Geo. L. Stearns, Grand Haven, Mich.

The following patents were issued March 6, 1883.

Dust-collector, Assignor to Geo. T. Smith Middlings Purifier Co., of Jackson, Mich.

Millstone paint-staff, Martin W. Leonhardt, Sedalia, Mo.

Centrifugal-machine, Johannes E. Meyer, Copenhagen, Denmark.

The following milling patents were issued March 13, 1883.

Disintegrating-mill, Geo. Elberg, Columbus, O.

Flour-bolt, Henry A. Graeter, Wooster, O.

Decorating-machine for grain, Joseph Jart-Cullman, Ala.

Centrifugal-machine, Michael Wanner, St. Louis, Mo.

Grinding-mill, James F. Winchell, Springfield, Q.

The following patents were issued March 20, 1883.

Mill-disk dress, Louis Gathmann, Chicago, Ill.

Grinding-mill, Robert McCully, Philadelphia, Pa. (2 patents)

Centrifugal reel, John J. Walterhouse, Vincennes, Ind.

The following patents were issued March 27, 1883:

Grinding-mill—John Beall, Decatur, Ill.

Turbine Wheel—Nathan P. Burnham, York, Pa.

Disintegrating machine—Silas Dodson, New York, N. Y.

Grain purifier and separator—Carl P. Gramke, Stettin, Prussia, Germany.

Cockle-machine—John Lucas, Hastings, Minn.

Roller-mill—Daniel W. Marmon, assignor to Nordyke & Marmon Co. of Indianapolis, Ind.

Automatic grain-measure—John L. Mayer and J. Sutter, McLean Co. Ill.

Water-wheel governor—David and A. Narracong, Reedsburg, Wis.

Grain-elevator—James B. Pelton of Frederick County, Md.

Bolting-reel—Edwin S. Phillips and L. A. Kealy, Lewisville, Texas.

FOREIGN TRADE CIRCULARS.

Under date of March 15 Messrs. Harris Bros. & Co., 6 Crosby Square, London, writes: We continue to have very cold weather with drying winds, favorable to the working of the land for spring sowing, and more wheat has gone in and is going in than people generally imagine; even April too will see "bearded" sorts sown. Farmers' deliveries have been fair and in better condition, as usual with March winds, and foreign arrivals have been good, with still great supplies of flour from America and Russia and North Germany. Wheat since our last has ruled very flat and in favor of buyers. Speculators have ceased operating, and in fact have shown considerable desire to reduce their holdings. We do not suppose millers as a rule hold large available stocks, but they all have a good deal to come forward, and so have only taken small lots for immediate use, which plan they will probably pursue as long as the weather seems to be favorable. Accounts of growing crops in California are not good, from the Eastern United States uncertain, from most parts of the United Kingdom and Western Europe not over satisfactory, from New Zealand very good, but from Australia we hear of only a small crop and not much shipping to Great Britain. Flour continues in too large supply, and has been in poor demand, operators waiting to see some lull in arrivals. Judging from United States advices the "make" on that side is much reduced. Old contracts have been filled and delivered. Wheats are too dear for present flour prices, so we on this side may reasonably look for immediate supplies, but meanwhile our cleverest local millers are finding good value for mixing amongst late large arrivals, to the detriment of sellers of wheat. C. F. & L. as well as on the spot. Maize in every position is cheaper, and still on the decline. May and June Danube is worth about 28s

6d. C. F. & L. T., but many sound operators point a good deal lower and so hold off buying "forward." Barley has sold well enough on spot since our last, and buyers of cargoes "forward" are fairly active. Oats continue flat and disappointing.

Under date of March 14, Anton Kufek, Liverpool, writes:

During the past seven days the weather has been unseasonably cold and considerable snow has fallen all over the country, accompanied by severe frosts, so that spring sowings have probably been interrupted to some extent. Farmers' deliveries continue on a liberal scale, viz: 100,000 qrs. of wheat at the average price of 42s. 6d. against 41s. 9d. during the same period last year. The flour trade during the past week has been extremely dull, and values for all descriptions of flour have ruled in buyers' favor, but the amount of business passing has been too small to test prices, which remain nominally unchanged. American quotations in some cases are materially lower, and after a long interval some business for shipment has once more become possible. Wheat has also been in very limited request and spot values have declined 2d. per cwt., whilst cargoes on passage are 6d. to 1s. per quarter lower to sell.

From the Weekly Market edition of *The Miller* (London) bearing date March 19, we quote as follows:

Farmers' deliveries are now small, but compare well with those of the past three years, and when the differences are allowed between the returns of the 150 towns and 187 towns, the supply remains a good one, 152,000 qrs. of home-grown wheat in the midst of spring seeding. The English average price, 42s. 6d., remains very moderate.

The current American shipments are fair.

	Wheat, qrs.	Flour, bags.	Maize, qrs.
To the U. K.	178,000	185,000	122,000
Cont.	85,000	4,000	30,000

and the visible supply goes on augmenting, contrary to the usual progress from winter to spring. This country's imports for the week were heavy in only one respect—that of flour.

	Wheat, qrs.	Flour, bags.	Maize, qrs.
Wheat, qrs.	169,574	173,514	504 lbs.
Flour, bags.	173,514	105,860	280 lbs.
Maize, qrs.	105,860	548,400	480 lbs.
Barley, beans, oats, &c.	548,400		

The question is now asked, would any other class interest besides that of milling remain inactive under the division of its profits of manufacture, such as the weekly import of nearly 200,000 sacks of flour constitutes? Brewer's, as a class, are strongly represented in Parliament, whilst millers appear to have no voice even to call public attention to the simple fact of English millers being shouldered out of their mills by foreign supplies of flour that is not cheaper to the public than would be home manufactured flour. At the present time the business in flour is really unsatisfactory, and most foreign samples are 6d. per sack reduced in price, those of English make being difficult to move at the old prices asked.

Messrs. Dunlop Brothers, of Glasgow Scotland, writes under date of March 14, 1883, as follows:

Trade during the past week has been lifeless, with values all tending in buyers' favor. Arrivals of wheat, flour, and oats are large; of other articles light.

The attendance at to-day's market was meagre, and the business transacted was trifling. Wheat was at least 3d. per boll cheaper, while sellers of flour would have submitted to a reduction of 6d. to 9d. per sack to effect sales. Maize was 6d. per 280 lbs. lower on the week; soft mixed being obtainable at 17-6. Other articles unchanged. Weather cold and wintry; heavy sleety showers falling.

LITTELL'S LIVING AGE. The numbers of the *Living Age* for the weeks ending Feb. 17th and 24th contain Sir Archibald Alison's Autobiography, *Quarterly*; Charity in the Early Church, *London Quarterly*; Panisism and the Caliphate, and England, France and Madagascar, *Contemporary*; Thomas Carlyle, *Macmillan*; Sketches in the Malay Peninsula, *Lecture Hour*; Anthony Trollope, *Good Words*; Dawn of the Spring, *St. James's*; The Sponge Trade of the Bahamas, *Oil, Paint and Drug Reporter*; Escapes and Imprisonments of Latude; with instalments of "A Singular Case," "For Himself Alone," and Selections of Poetry.

A new volume began with the first number of January. For fifty-two numbers of sixty-four large pages each (or more than 3,300 pages a year) the subscription price (\$8) is low; while for \$3.50 the publishers offer to send any one of the American \$4.00 monthlies or weeklies with *The Living Age* for a year, both postpaid. Littell & Co., Boston, are the publishers.

THE BEST READING. Every family that desires to provide for its young people wholesome and instructive reading matter should send for specimen copies of the *Youth's Companion*. Its columns give more than two hundred stories yearly, by the most noted authors, besides one thousand articles on topics of interest, anecdotes, sketches of travel, poems, puzzles, incidents, humorous and pathetic. It comes every week, is handsomely illustrated, and is emphatically a paper for the whole family.

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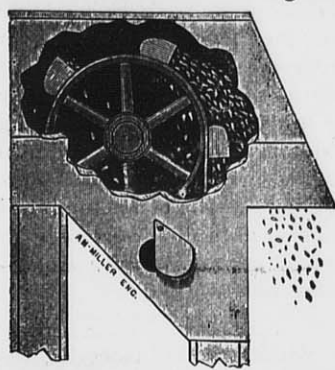
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The wheel is STRONG, DURABLE AND EFFECTIVE. Unsurpassed in Power at "part gate." Warranted to give full satisfaction.

ELEVATOR HEADS AND FIRES.

BY H. B. HORTON, IN "AMERICAN MILLER."

It is a fact, well known to underwriters, that three-fourths of flour mill fires are night burnings, or occur when the mill is not running. There is nearly, if not quite, as great a percentage of them for which the cause is reported as "unknown." Usually these mysterious fires are attributed to incendiarism, as being the easiest way to explain what appears to be otherwise unexplainable; but, unless it can be shown that millers are more dishonest than other classes of business men, or are more likely to have desperate enemies who single them out for fiery vengeance, incendiarism should not be credited with a larger proportion of mill fires than of those occurring in other business establishments, and some reasonable cause must be given for the many fires which develop when mills are closed and the origin of which seems shrouded in mystery. Spontaneous combustion is undoubtedly accountable for a large share of these burnings, and when one sees so many mills, where cleanliness is little regarded, the



A PROPER FORM OF ELEVATOR HEAD.

wonder is that so few burn from this cause, rather than that so many are fired so suddenly and unexpectedly.

Aside from spontaneous combustion—the workings of rats or mice with matches, or from defective heating apparatus, it is difficult to imagine how an honest fire can be developed in an idle mill, unless it originated while the mill was in operation and was smouldering in concealment when the mill was shut down. Hence it is to the place, where a spark may be deposited and live escaping observation for any length of time, that special attention and care should be given. There is no spot in a mill where this is more likely to occur and probably none where it does oftener happen than in the elevator head. Yet, until very recently, few millers have appreciated this fact, or given the matter a thought.

In late years great improvements have been made in nearly all classes of mill machinery, not only with the view of bettering the quality of products, but to safety in operation; but little or no change has been made in elevator heads to render them more secure, and millwrights as a rule are opposed to any change that may be suggested, ridiculing the idea that the old style used for generations past has any element of danger. Still the strut board is placed within an inch, or two inches at most, from the pulley, and in a horizontal position. The inclosure thus formed soon fills with dust from the material elevated, in many cases packing so hard as to form a friction rubber for the pulley. The shaft settles and the pulley grinds upon the strut board or the buckets clog and the belt held, with immense friction on the revolving pulley, ignites the stuff which has been held in readiness for just such an accident. The fire so started will smoulder, as it will in "punk," for hours, giving out so little smoke or smell as not to attract attention, until it eats its way through the box to the air. Then comes the catastrophe. Another mill loss is recorded with the usual announcement that the cause is "unknown," or that it was probably the act of an incendiary.

The moral of all this is evident. A change in the mode of constructing elevator heads should be made so that such accidents cannot happen. The strut board should be placed so it would be impossible for the pulley to settle upon it, and inclined to such an angle toward the down-leg as would make it self-clearing after the manner shown in the accompanying cut. If the inner surface of the board were shellacked and smoothly sand-papered it would be better still. If there be no accumulation of stuff under the pulley to hold a smouldering spark, no friction less than that which would ignite the wood work, can do any material harm. If the wood be fired it must be when the mill is in operation, and when it would probably be early discovered under circumstances admitting a possibility of saving the property before serious damage occurred.

The inspectors of the Millers' National Ins. Co. have done much to call attention to the danger of concealed fire in the ordinary elevator head, and many millers in their field of operations, have adopted the style of head represented in the cut. I am confident that were it generally in use, there would be a great decrease in the number of flour mill fires and especially in that class of mysterious burnings which make mill risks so unsatisfactory to the underwriters and effects so unfavorably the reputation of those millers who are unfortunate enough to have losses resulting from them.

INDIAN VERSUS AMERICAN WHEAT.

COMMUNICATION.

[From Hon. HANS MATSON, Consul General of the United States to Calcutta, British India, to the UNITED STATES MILLER.]

The annual production of wheat in British India has of late years increased, until it now reaches about 240 million bushels,* and the export for the last five years has been as follows:—

	1877-78	1878-79	1879-80	1880-81	1881-82
Bushels,	12,175,853	2,170,631	4,312,418	14,012,291	37,135,481
of which Great Britain and France have taken the following quantities:—					
Great Britain,—					
Bus.,	10,698,518	1,597,273	3,037,022	8,964,168	17,507,907
France Bus.	217,792	20,556	138,439	2,513,933	9,948,403

Assuming that 28 million bushels are held for seed, there will be left a home supply of 175 million bushels; how much of this is actually consumed, and how much stored away in reserve, it is impossible to ascertain; but it is well known that the quantity held in reserve is very large and usually estimated, with other bread-stuffs, sufficient for one whole year's consumption, and that it requires from two or three years' accumulated surplus to make up such reserve.

The total area devoted to wheat each year is now a little over 20 million acres, of which 7 million acres are in the Province of Punjab, 6½ million in the Northwestern Provinces and Oudh, 3 million in the Central, and 1½ million in Bombay, 1 million in Bengal, and the remainder divided among the Provinces of Berar, Sindh, Madras, Ajmere, Mysore and British Burmah in the relative order named. The best average yield is obtained in the Punjab, where it is estimated at 13½ bushels per acre, and in the Northwestern Provinces at 11½ bushels; the general average is about 12 bushels per acre, though by high cultivation and use of irrigation and manure, instances are not uncommon of a yield as high as 25 and even 30 bushels per acre.

CULTIVATION AND COST.

The latitude has but little influence on the wheat crop in India compared with differences in soil and mode of cultivation; the crop requires a great deal of moisture, hence irrigation is of special importance, and various methods are employed for that purpose; the one destined to become a leading factor in the production of wheat is that of canal irrigation, which is now receiving the special attention of the general and local Governments, and important works are being made and projected for an extensive system of canal irrigation. One of these, the "Sirhind" canal in the Punjab, has just been completed; it was built mainly by prison labor, is 502 miles long, and will irrigate 780,000 acres through 2,500 miles of minor channels.

The wheat is sown in the autumn and harvested in March or April; it is usually sown in drills or rows, and weeded like garden stuff, and in quantities not much larger than garden patches in the United States, but the agricultural population numbers nearly 200 millions, and it is the aggregate of innumerable little units which in agriculture, as in every thing else in India, brings the country into importance, and this fact is so closely interwoven with the whole social, industrial and legal network of India, that it bears a strong influence even upon the future question of Indian versus American wheat.

The Indian agriculturist "Ryot" can in no sense be compared to the American farmer, but rather to the serf of Russia. He is a tenant on hard conditions, and is by custom and bigotry almost a fixture on the particular spot of land where he was born; his farming is done on a very small scale and according to old methods, to which he clings with religious veneration; his wants are very few, and he endures poverty and even hunger with patience; he cultivates his patch of 5 to 15 acres on shares for the landed proprietor,

*NOTE.—There are as yet no complete agricultural statistics for India, and the figures given in this report, except those relating to exports, are based partly upon local returns, but mostly upon official estimates.—It is hoped, however, that for the objects in view they will be found quite sufficient.—They are given in round numbers for the sake of convenience.

"zemindar," who holds under rental to the government, and the better half of his gross income generally goes to the zemindar, the priest ("brahmin") and the usurer, in the form of rent, presents, offerings and interest, and if he can net 10 cents a day by his hard and hopeless labor, that will suffice for the most pressing wants of his household. His home is mud—or bamboo-hut, his property a pair of small bullocks, a few cows, calves and goats, a wooden cart and a few brass and earthen pots, in all worth about fifty dollars, and his implements and tools are of the rudest kind, such as his ancestors used a thousand years ago; and yet he is making some progress under British rule, and finds his wants increasing, and at the same time better outlets for his produce and more recompense for his labor and on the whole, is so independent on 10 cents a day, that he will eat or store his wheat rather than sell it below a certain price. Of course he does not employ machinery in farming, but ploughs his land with a crooked piece of iron-pointed wood, harrows it with an implement resembling a common ladder laid flat on the ground and dragged by the little bullocks crossways over the field; he sows by hand, reaps with a rude sickle, carries the sheaves home on his back or in the bullock cart, threshes them with a wooden club, or lets the cattle tramp out the grain, and cleans it by hand-winnowing.

Under these conditions the ryot can afford to sell his wheat at the nearest market place, if within a day's journey of his home, for 50 to 60 cents per bushel; but when it does not bring that price, or very near it, he consumes his small supply or stores it in a hole under ground until a more favorable time shall come, and when it comes, he sells very short and uses millet and inferior grains for his family subsistence, so that a great elasticity in the amount of surplus is constantly kept up by the countless hosts of the ryots themselves.

And this same course will necessarily be pursued in the main for a long time to come, because the social and religious condition of the agricultural classes is such that it will take generations to make any material change among them. Then again, the cutting up of the land into small patches to suit the rapidly increasing population and for irrigation purposes, the absence of roads and bridges, the want of strength in draught animals, the poverty of the people, and other reasons, make it impossible to farm on a larger scale and to use machinery; but even if all these objections were removed, the present cost of labor is too low even for the successful competition of farm machinery, and it may be regarded as certain that the cost of wheat as now produced is at, or near, the very lowest minimum, and when it does not bring 50 cents a bushel to the ryot, it will be consumed at home in lieu of other bread-stuffs and the wheat area will be temporarily diminished.

QUALITY.

There are a great many varieties of wheat produced in India, and they have become more or less intermixed, though efforts are being made to separate and select the best or those most suitable for the European market. These have been divided into four principal groups, viz:—

1. The soft white wheat of a bright straw color and a white floury fracture. This variety is most suitable for the London market, and is in great demand by English millers on account of its dryness, to mix with moist English wheat.

2. The hard white wheat, with a brittle grain of a flinty or ricey appearance. This brings a higher price in Italy for the manufacture of macaroni than in London.

3. The soft, red wheat, which differs from the soft white only by the reddish color of the skin and a smaller berry; it is also very suitable for the English market.

4. The hard, red wheat which is of a dark brown color, translucent in appearance, with a smooth and glass-like fracture. It stands lowest in the London market.

Compared by English standard in quality and value to American wheat, select lots of first group have been found equal to the best Californian and Oregon, but the average best grade is between No. 1 and No. 2 Milwaukee, and the relative values of the four Indian groups are as follows:

2nd group	5 cents per bushel less than 1st.
3 " "	" " " " " " " " 2nd.
4 " "	" " " " " " " " 3rd.

The standard of all the groups is being gradually raised by more care in separating vari-

*NOTE.—The only exception would be in favor of a light, cheap hand-fanning mill, and that only because the grain cannot be properly cleaned and separated by present methods for the English market; and here is a good opportunity for some American manufacturers, the English fanning mills sent here for trial having proved too heavy and expensive.

GARDEN CITY

1st Break Machine

—AND—

BRUSH SCALPER

—WITH—

ASPIRATOR.

To Millers Operating Buhr Mills.

We guarantee to improve the grade of your flour by the use of our 1st BREAK MACHINE and BRUSH SCALPER. Putting in these machines will necessitate no other changes in the present arrangements in your mills.

To Millers Operating Roller Mills.

By the use of our 1st BREAK MACHINE and BRUSH SCALPER you can positively remove all seam impurities and germs after the first break, thereby obtaining better results.

Write for descriptive catalogue and prices.

PRICES REDUCED!

IMPROVED GARDEN CITY

Middlings Purifier

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Traveling Cloth Cleaners.

Our improved Purifier has every device requisite to make it perfect, and every one in use is giving the greatest satisfaction to the users. The Cloth Cleaners are guaranteed to clean the cloth better than is done on any other purifier.

Over 4000 Garden City Purifiers in use, nearly 800 of which are the Improved Machine.

The Best and now the Cheapest. Write for circulars and price list.

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Which has long been acknowledged as the best made, and which has lately been further improved, making it now beyond competition. We make it up in the best style at short notice. Send for prices and samples.

Garden City Mill Furnishing Company,

CHICAGO, ILL.

[Mention this paper when you write to us.]

eties, more thorough cleaning and the use of better seed.

TRANSPORTATION.

The facilities for handling and transporting grain are very poor compared to the United States; there are no grain elevators and no facilities for shipping in bulk, but all grain must be put in bags, handled and carted by manual labor. The cost of ocean freight depends upon the fluctuations of the general steamship carrying trade, and varies so considerably that exporters can make no definite calculations ahead, but are obliged to watch their opportunities from week to week and from day to day. Nearly all the wheat exported goes through in steamers via Suez Canal, and the time required for transit to London is, from Calcutta, 35 to 40 days, from Bombay 28 to 33 days, and from Kurrachee 30 to 35 days. While the wheat is exposed to the air during the inland transit and storage at the sea-port, it is liable to serious damage by the weevil, an insect germinating in the grain itself under the influence of heat; but when stored under ground it will keep in good condition for years, and even in a ship's hold it is comparatively safe during the time required for transit.

The money exchange market between London and India is constantly fluctuating, which causes another serious drawback to the export trade. The cost of inland freight, so far as the railroads extend, is fixed by Government and not liable to any material fluctuations. Trunk lines are already in operation through all the wheat producing provinces, and several branch lines have been built, while others are being constructed or projected; but compared to the principal wheat districts in the United States, Indian railroads are few and far between, and the work of construction is very slow. A very important line, the "Indus Valley," has lately been completed, and brings the Punjab in direct communication with the sea at Kurrachee, which is destined to become an important sea-port for the exportation of wheat. The following table gives the cost of transportation from the principal wheat districts to the sea-port:

From Punjab to Kurrachee.	Average distance 800 miles, freight per bushel 25 cents.
From N. W. Provinces and Oudh to Calcutta.	Average distance 700 miles, freight per bushel, 18 cents.
From Central Provinces to Bombay.	Average distance 460 miles, freight per bushel, 16 cents.
From Province to City of Bombay.	Average distance 150 miles, freight per bushel, 8 cents.

To this cost must be added the charges of the middle-men at the inland bazar, which will average 5 cents per bushel, and the cost of bagging, shipping and commission to the Exporter at the sea-port, 8 cents more; ditto insurance and landing charges in London, 5 cents; and ocean freight, which averages from Calcutta to London 30 cents, and from Bombay and Kurrachee 25 cents. Thus it will be seen that the actual cost of Indian standard wheat from the Punjab, N. W. Provinces and Oudh, where two-thirds of the wheat is produced, will average from \$1.16 to \$1.28 per bushel laid down in London, and while the wheat from the other provinces is somewhat cheaper, on account of the shorter distance to the sea-board, it is relatively inferior in quality.

About 7-20 of the export to Europe goes over Calcutta.	11-20 "	"	"	Bombay.
" 2-20 "	"	"	"	Kurrachee.

UNDEVELOPED WHEAT RESOURCES.

The total area of India under British administration is 904,000 square miles, and that of the native states 575,000 square miles, but the latter area is not dealt with in this report. The following table gives the area in each of the four principal wheat producing provinces, with the proportion of cultivated, culturable and unculturable areas, so far as can be ascertained:

Provinces.	Total area sq. miles.	Cultivated area sq. miles.	Culturable area sq. miles.	Unculturable area sq. miles.
Punjab...	107,010	36,656	36,706	33,648
Northwest and Oudh...	105,031	51,000	20,139	33,892
Central...	84,208	22,840	26,755	34,613
Bombay...	73,699	35,053	4,022	34,624

from which it appears that in those four provinces alone there are nearly 88,000 square miles or 56 million acres virgin land, the larger portion of which can be made suitable for the cultivation of wheat. It should be remembered, however, that this land is overgrown with jungle, and the process of clearing is very slow and expensive, and that nearly all of it requires irrigation.

In order to facilitate the development of the wheat resources, and to assist the wheat export trade, the Government of India is pursuing a policy of encouragement, which has already resulted in better facilities of transit to the sea-board by the construction of new railways, and in reduction of freight; it has removed taxes, export and octroi duty; it is

diffusing knowledge and instruction in the cultivation of wheat and the improvement of the soil; constructing canals for irrigation and transportation, and in many other ways giving moral and material aid to this great cause, in the hope that India may ultimately become the granary of Great Britain.

When all these facts are summarized it will be found:—

That India can produce an average quality of wheat at as low cost to the producer as the most favored locality in the United States.

That she can now supply the European market with about 40 million bushels annually, and possesses facilities for increasing the supply to an almost unlimited extent, owing to the great elasticity of the home consumption and to the vast amount of land awaiting cultivation.

That in quality, cheapness of transportation, facilities for handling, safety against damage during transit, and stability of money exchange, the American wheat, especially that from the new North West, has such advantages that there need be no serious apprehension on account of Indian competition at legitimate prices; but that in order to maintain this advantage, it is absolutely necessary that America should keep pace with India in the efforts to reduce and maintain freights at the lowest possible minimum.

On the other hand, it is an indisputable fact that Indian wheat has already become, and will continue to be, a very important factor in the grain markets of Europe, and a check against high prices, brought about either by speculation or any other unnecessary or artificial means.

And finally, that upon the basis of a fair average crop throughout the world, the American farmer will have to prepare himself to reduce the cost of production to the lowest minimum, and be content with small profits, or else wheat growing in India may be stimulated to such an extent that subsequent competition would become extremely formidable.

ROLLER MILLS.

BY THEODORE VOSS. [LONDON.]

THEIR PRESSURE AND LEVER ARRANGEMENT.
(Continued from March number.)

Steel pressure springs do not deserve to be so largely employed in roller mills as they are at present. They often vary in temper, and consequently do not produce the same pressure on each side. The continuous variations of tension to which they must be subjected alter their elasticity, and it is always impossible to know the exact amount of pressure which they exert. Weights, on the other hand, never change their influence; it is easy by their means to produce the same pressure on each side of a roller mill, and it is not difficult to graduate this pressure according to the nature of the material treated.

With regard to the proportions of a ; b ; c_1 and c_2 ; in accordance with different values of p we can draw some further interesting conclusions by means of equation (3), viz:

$$p(b c_1 - a c_2) = 2 G(a + b) d$$

For instance, if we required to know the proper proportions of a and b for $p = 150$; 200; 300 and 400 respectively, we should find as follows by choosing $a + b = 100$ $a + p = 150$; $G = 100$; $a + b = 100$; $d = 80$; $c_1 + a = 220$; $c_2 + b = 220$; $c_1 + c_2 + a + b = 440$; $c_1 + c_2 = 340$.

$$c_1 = 194.2425$$

$$c_2 = 145.7575$$

$$a = 25.7575$$

$$b = 74.2425$$

$$P_2 = P_1 = 170.395$$

For $p = 200$ we should find

$$c_1 = 188.1818; c_2 = 151.8182; a = 31.8182; b = 68.1818 \text{ and } P_2 = P_1 = 220.76 \text{ lbs.}$$

For $p = 300$ we should find

$$c_1 = 182.12125; c_2 = 157.87875; a = 37.87875; b = 62.12125; P_2 = P_1 = 234.25 \text{ lbs.}$$

and finally for $p = 400$

$$c_1 = 179.0909; c_2 = 160.9091; a = 40.9091; b = 59.0909; P_2 = P_1 = 429.125 \text{ lbs.}$$

Thus it will be seen that by slightly altering the proportions of a and b the necessary equality between top and bottom pressure can be easily obtained by employing a constant pressure p , adapted for the material to be treated. It is manifestly wrong to employ the same proportions of lever a b for the different rollers. The crushing pressure of break rolls and smooth rolls differs widely, according to the material passing through them, and the machines must be constructed accordingly.

Many more interesting illustrations of the influence of the roller weight and the lever proportions, on the crushing pressure of such "three-high" rollers might be given, but those mentioned are sufficient to prove that it is impossible to graduate the pressure without causing thereby unequal work. Only for one

constant pressure does the bottom pressure become equal to the top pressure.

Every miller, however, who has had experience with roller mills, knows that it is not only necessary that these pressures should be equal, but also that they must be graduated. Such graduation of pressure is easily attainable in horizontal roller mills, where both roller pairs are independent, and also in "two-high" roller mills, in fact everywhere where the roller pairs are independent, but in all "three-high" roller mills, where the bottom roller is connected by levers or springs with the top roller, such graduation creates inequalities of pressure and cannot therefore be obtained without serious disadvantages.

Another great disadvantage of all three-high roller mills, is the vibratory motion of the middle roll between top and bottom roll. As soon as the bottom feed is momentarily greater than the top feed, the middle roll will be pressed upwards, and as soon as the top feed becomes greater, it will drop down again. The shaft of the middle roll always had (and always must have) sufficient play in its bearing for these vacillations; and as the bottom and top feed are never quite equal, the middle roll will be continually changing its position between the top and bottom roller.

Not only the middle roll vibrates but also the top roll, which of course also has some play in its bearing. As can be seen from fig. 4, whenever there is a slight decrease in top feed, either on one side or the other, the top roll is drawn downwards by its own weight and thus the distance between the roller surfaces is continually changing.

A uniform effect on the feed is therefore difficult to be obtained and it is a fact that well managed horizontal roller mills, which allow much less vibration, would show better work than three-high rollers. It is a curious fact that no American manufacturers make three-high roller mills; they all make horizontal roller mills in which each pair of rollers has its independent pressure adjustment.

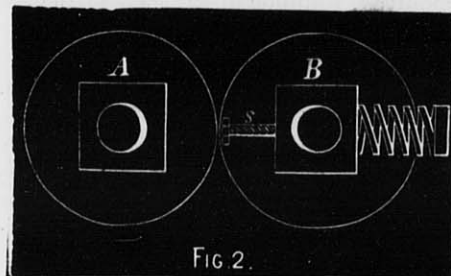


FIG. 2.

The importance of arranging rollers so that in no case can they approach beyond a certain minimal distance, has not as yet received the attention which it deserves, and with reference to figs. 2, 3 and 4, it may be said that wherever the necessary crushing pressure is obtained by the action of springs or weights against the bearing of the rollers, that there is always sufficient freedom in the bearings to allow the roller shaft to vibrate. These vibrations cause all these rolls to come into occasional contact, and that is the reason why they must be opened when running without feed. If in these roller mills, the rollers should really not touch, there would be no necessity to open them, when without feed.

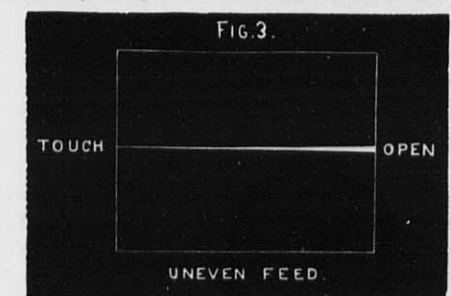


FIG. 3.

If however in two-high roller mills (see fig. 4), the top roll had sufficient weight to supply the necessary crushing pressure, no pressure against the bearing would be required, the top shaft would then lie at the bottom of the top bearing and as the bottom roll is also kept by its own weight in its lowest position, such rolls, when their minimal distance is once adjusted, cannot approach beyond this distance. Therefore, even if slight irregularities in the feed should occur, the rollers cannot come into contact and no undue compression can take place. Such rolls therefore, do not require any levers or springs.

The weight of the top roll would be, so to say, carried by the feed, and therefore very little friction would be produced in the top bearings so that only the friction of the bottom bearings would have to be overcome.

It has been lately said by an advocate of three-high rollers, that anti-friction rings do not achieve the purpose for which they are intended, in fact the effect of such anti-friction rings was compared with the cold rolling process.

In the same manner it may be also said that frictions rolls fail to achieve the purpose for which they are intended. Friction rolls would of course reduce the friction to some extent, if they were running, but the practical difficulty is to keep them running. The majority of friction rolls, especially those which work in the bearings, soon become irregular on their surface; they therefore stand still, and they then offer a very insufficient bearing surface.

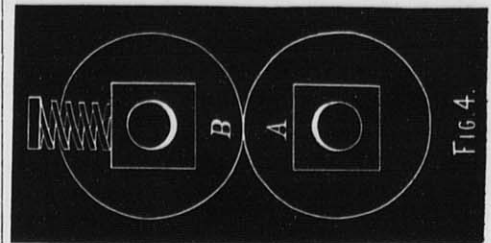


FIG. 4.

Such anti-friction appliances always make the roller mills very complicated and as their advantages are, to say the least, doubtful, it seems that ordinary well greased bearings are preferable, especially if they are sufficiently long to present a large bearing surface.

Having thus investigated the lever arrangement of some roller mills and the pressure required for different milling products, I come to the conclusion that levers and pressure springs should be entirely avoided; the necessary crushing pressure ought to be produced direct by the weight of the top roll (in two-high rollers) instead of indirectly by pressing the bearings against the roller shafts.—From The Millers' Gazette (London.)

(CONCLUDED.)

O. J. BOLLINGER, of York, Pa., the well-known manufacturer of water-wheels says in a recent communication about "Setting Turbines." I will not attempt in this limited paragraph to give directions in detail how to set wheels, or to show the many ways in which they can be applied to drive machinery, because the location has so much to do with the subject that it is only after an examination or survey of the situation has been made that this can be done (as it should be) to the best advantage, but will give a few leading points, viz: As a rule, make the size of penstock in the clear equal to twice the diameter of the wheel (properly) larger is no harm, but seldom necessary. The most economical way to set a wheel at the bottom of the fall, (as it is usually termed,) is to frame a square (size of which I give to parties ordering wheels) in bottom of penstock to form the hole over which the wheel is set. This square should be of the same depth of timber as the other bottom timbers, and should be made perfectly air-tight, and arranged so to dip, say one to two inches into the back-water when at the lowest point to which it can be drained when the wheel is not running. This arrangement has two advantages. First—The penstock will become dry if the water is shut out. Second—It saves from six to eight inches in deepening the pit to get the requisite amount of room for the escape of tail water. But it must not be forgotten that if there are any air leaks between the wheel and the tail water, all the fall between the two is lost and does not act on the wheel. A more sure, but not cheaper, way, is to lay the top of the penstock sills as low as the surface of tail water, then after the bottom planks are put down the penstock will still be dry when the water is shut out. But this plan will require six to eight inches more depth of pit than the first, but there need be no apprehension about loss of head with proper vent under the penstock for the escape of tail water and sufficient capacity of flume to supply water to the wheel. If said flume consists of a single pipe it should in no case be of a less inside diameter than the diameter of the wheel which it is intended to supply; and if this flume, or pipe, is of considerable length, or if there are short turns, or elbows, it should be considerably larger.

COST OF WHEAT CARRIAGE PER BUSHEL.

The cost per bushel for sending wheat from the great centres of production and distribution to the leading markets of Europe, has been elaborately compared and tabulated as follows, by Mr. R. Meyer, in the *Austrian Monthly of Social Science and Political Economy*:

FROM	TO	CENTS
San Francisco	England	36 to 39
The "Far West"	Atlantic Harbor	40
New York	Liverpool	10
Chicago	Liverpool	19
Bombay	England	13
Calcutta	England, via Suez	18 to 29
Calcutta	England, via Cape	15 to 20
Australia	England	21
Buenos Ayres	Havre	16 to 24
Odessa	England or Antwerp	13 to 28
Podwolocziska	Delhi	40
Brody	Hamburg	31
Bralla	London	17
Galatz	Hamburg	51
Budapest	Hamburg	39
Budapest	Liverpool-on-Rhine	28
Leipzig	Frankfurt-on-the-Main	28
Vienna	Frankfurt-on-the-Main	22
Vienna	Fiume	26
Vienna	Trieste	21

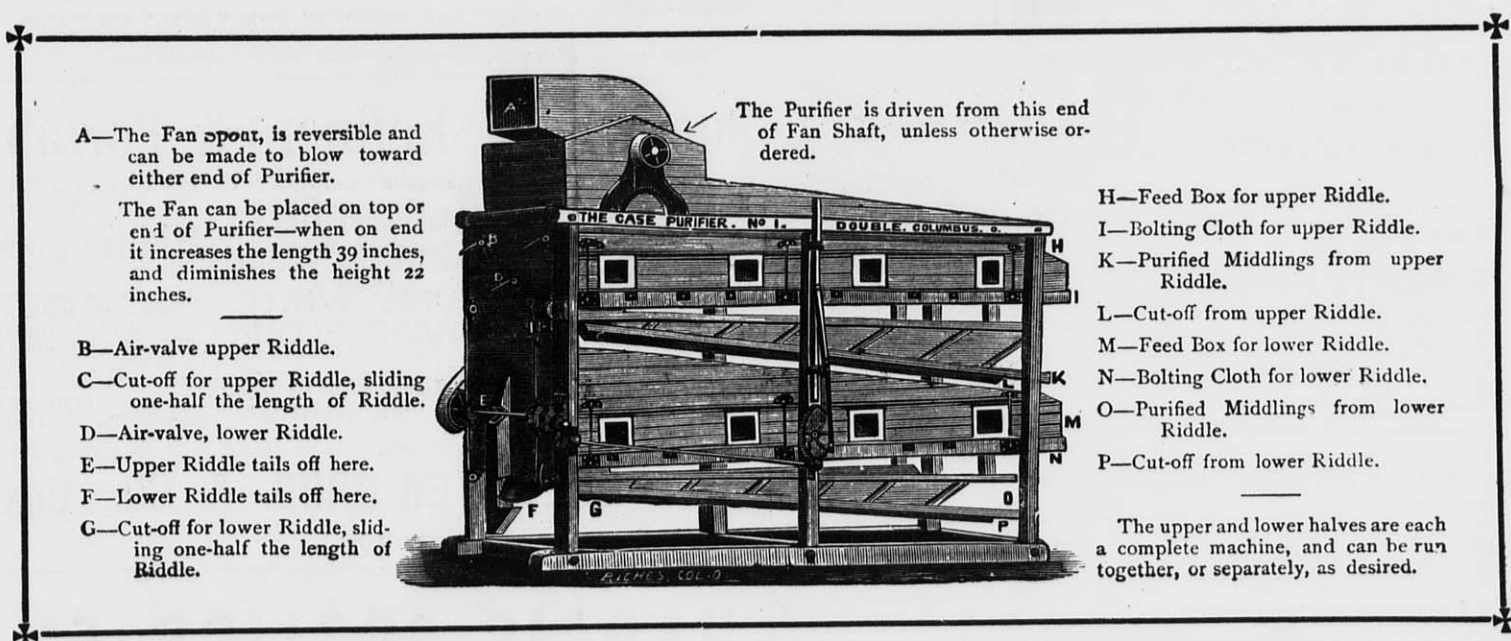
OUR SYSTEM

Of Gradual Reduction consists in making the earlier Breaks on the "Case Breaks." The best in the world for the purpose. The following reductions are made on our 4-Roller belted Mill "Bismarck," which has the most simple, plain and thorough adjustments ever applied to a Roller Mill, one of the chief features of which is the

FEED

accomplished through our Automatic Feed Box, patented, the ONLY AUTOMATIC FEED in use on Rolls. We make different lines of these machines for small, medium and large Mills. The Miller pays only for the capacity wanted, from 1 bbl. an hour upward. The strongest guarantee given in every case. Can refer to scores of Millers using our full system whose flour is up to the "top-most notch." Write for information. No trouble to answer letters.

The Case Middlings Purifier



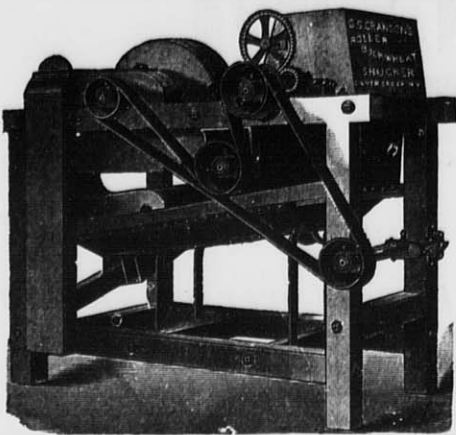
*Still maintains its popularity in all sections of the country. An Iowa Miller writes to-day: "I would like other Millers to know what a grand Purifier I have." "It is doing most splendid work." "The Case is the best Purifier on the market." &c. This and hundreds of others similar in spite of the most bitter and unrelenting opposition ever encountered by any machine in any age or any country. The methods of one of our competitors, if made public, would disgrace the commercial records of the Fejee Islands. It would be too tame to call it Bull-dozing, co-ersing, intimidating or the like. It has meant more than these. But the vicious power of a tyranizing monopoly, damaging alike to Millers and Manufacturers, has been broken. Fair dealing backed by the best Purifier in the world has done it, and we feel it through every nerve of our business, that we are gaining and they are loosing friends. If you want the **KING OF PURIFIERS** buy the **CASE** and fear not. We are able to protect you. Don't believe a lie.*

CASE MFG. CO.,

Columbus, Ohio.

Millers visiting Chicago are invited to call on our Agent there
WM. E. CATLIN & CO., No. 57 SOUTH CANAL STREET.

The Roller Buckwheat Shucker



Manufactured for G. S. CRANSON & SON, Silver Creek, N. Y., by Howes, Babcock & Ewell.

This machine has been
THOROUGHLY TESTED,
GIVING THE

Largest Yield of Flour

FROM BUCKWHEAT ever obtained, PURE, WHITE, and FREE FROM POISONOUS SHUCKS. No Miller can afford to use any other. It will pay for itself in the saving and quality of flour in 1,000 bushels of grain over any other device now known. We have so simplified our Shucker that we require only one-half the power, with a large increase in capacity over our first Machines.

G. S. CRANSON & SON,
Silver Creek, N. Y.

Waterous Engine Works Co., Brantford, Ont.,
AGENTS AND MFRS. FOR CANADA.

[Please mention UNITED STATES MILLER when writing].

5300

'Triumph' Power Corn Shellers

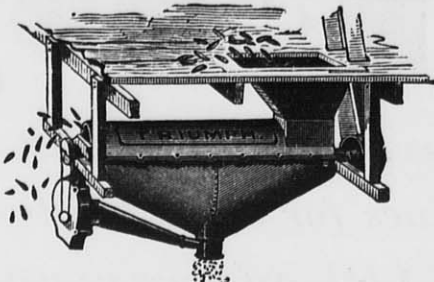
IN USE.

Send for Descriptive circular and Testimonials.

ADDRESS

PAIGE MANUFACTURING CO.,

20, 22 and 24 St. Clair St., Fairsville, O.



JAMES LEFFEL'S IMPROVED WATER WHEEL,

Fine New Pamphlet for 1882.

The "OLD RELIABLE" with Improvements, making it the Most Perfect Turbine now in use, comprising the Largest and the Smallest Wheels, under both the Highest and Lowest Heads in this country. Our new Pocket Wheel Book for 1881 and 1882 sent free. Address,

JAMES LEFFEL & CO., Springfield, Ohio.

and 110 Liberty St., New York City.

[Mention this paper when you write to us.]

RICHMOND MANUFACTURING CO. LOCKPORT, N. Y.,

Manufacturers of

RICHMOND'S CELEBRATED

Smut Machines,

Brush Machines,

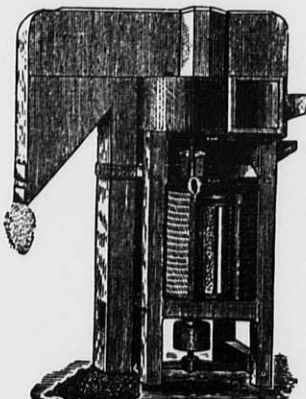
Grain Separators,

and Bran Dusters.

Nearly Two Hundred of these Machines are now in operation in the city of Minneapolis, Minn., alone, and more than sixty in the city of Milwaukee, Wis. They are also extensively used in many other sections, both on Winter and Spring Wheat.

SEND FOR DESCRIPTIVE CATALOGUE.

[Mention this paper when you write.]



Adjustable Brush Smut Machine

STEEL CASTINGS

Works, CHESTER, PA.
[Mention this paper when you write us.]

FROM 1-4 to 10,000 LBS. WEIGHT.

True to pattern, sound and solid, of unequalled strength, toughness and durability. An invaluable substitute for forgings or cast iron requiring threefold strength. Gearing of all kinds, Shoes, Dies, Hammer-Heads, Cross-Heads, for Locomotives, etc. 15,000 Crank Shafts and 10,000 Gear Wheels of this steel now running prove its superiority over all other steel castings. FRANK SHAFTS, CROSS-HEADS and GEARING, specialties. Circulars and price list free. Address,

CHESTER STEEL CASTINGS CO.,

407 LIBERTY ST., PHILADELPHIA, U. S. A.

J. H. REDFIELD,

Millwright and Mill Furnisher,

Patentee and general Agent for

REDFIELD'S COMBINED ELEVATOR & PURIFIER.

And the Champion Wheat Cleaning Machinery.

Large stock of Du Four's Bolting Cloth on hand, which we sell lower than can be purchased elsewhere. Cloths made up to order and guaranteed to fit, and be of the best material, and made in the most workman-like manner.

Send for catalogue and price list. It will pay you.

J. H. REDFIELD, Salem, Ind.

[Please mention the United States Miller when you write to us.]

WALKER BROS. & CO.,

FLOUR AND GRAIN

Commission Merchants

TRINITY SQUARE,

LONDON, E. C., - ENGLAND.

CHOICE BEVELLED EDGE

FLOUR BRANDS

For two dollars and upwards. Also RUBBER STAMPS BURNING BRANDS, SEALS, STEEL NAME STAMPS LETTERS AND FIGURES, Etc. Orders promptly attended to
CHAS. H. CLARKE,
82 Wisconsin St., Milwaukee.

GANZ & CO.,

Budapest, Austria-Hungary.

We are the first introducers of the Chilled Iron Rollers for milling purposes, and hold Letters patent for the United States of America. For full particulars address as above.
[Mention this paper when you write to us.]



Mill Furnishing,
Foundrymen & Machinists.
Established 1861.
MANUFACTURE
MILL STONES.
Flouring Mill Contractors.
Send for Pamphlet.
Nordyke & Harmon Co
Indianapolis, Ind.
[Mention this paper when you write us.]



POOLE & HUNT'S Leffel Turbine Water Wheel

Made of best materials and in best style of workmanship.

Machine Molded Mill Gearing

From 1 to 20 feet diameter, of any desired face or pitch molded by our own SPECIAL MACHINERY. Shafting, Pulleys, and Hangers, of the latest and most improved designs.

Mixers and General Outfit for Fertilizer Works.

Shipping Facilities the Best in all Directions.

POOLE & HUNT, Baltimore, Md.

N. B.—Special attention given to Heavy Gearing for Pulp and Paper Mills.
[Mention this Paper when you write to us.]

Stout, Mills & Temple,

DAYTON,

OHIO.

MANUFACTURERS OF THE

American Turbine Water Wheel,

Best Quality French BURR MILLSTONES.

Sole Agents in Dayton for the sale of

DU FOUR & CO'S CELEBRATED BOLTING CLOTHS.

Flour and Paper Mill Machinery, Best Chilled or Portland Cement Rolls for Crushing Wheat and Middlings and

GENERAL MILL FURNISHINGS.

The AMERICAN TURBINE, as recently improved, is unequalled in the power utilized from a given quantity of water, and is decidedly the BEST "PART GATE" Water Wheel ever known. It has also been otherwise greatly improved.

Large Illustrated Catalogue Sent Free on Application.

[Mention this paper when you write to us.]

BOTTLED BEER.

VOECHTING, SHAPE & CO.,

SOLE BOTTLERS OF

JOSEPH SCHLITZ BREWING COMPANY'S

CELEBRATED MILWAUKEE LAGER BEER.

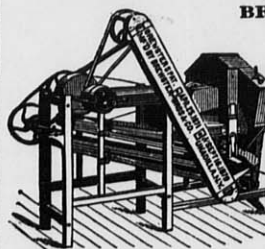
Cor. Second and Galena Streets,

MILWAUKEE, - - - WISCONSIN.

BOTTLERS' SUPPLIES CONSTANTLY ON HAND.

[Parties corresponding will please state where they saw the advertisement.]

Buckwheat Refiners & Portable Mills.



BREWSTER'S CELEBRATED

Buckwheat Refiner

Is the only Machine

whereby the greatest

yield of

PURE, WHITE,

SHARP FLOUR

can be obtained.

The only reliable, practical and durable Machine

IN THE WORLD.

The Positive Adjustment

AND AUTOMATIC

Middlings Mill

Is strictly Self Protecting,

The **BEST ADJUSTMENT**

IN THE WORLD,

And the only

PERFECT GRANULATOR,

GRINDS COOL, SELF OILING,

GREAT SAVING OF POWER,

SIMPLICITY AND

Durability Combined.



Satisfaction Guaranteed on all our Goods. Send for descriptive Circular, giving Prices, Sizes, Terms, etc.

BREWSTER BROS. & CO., Unadilla, N. Y.

[Mention this paper when you write.]

HARRIS-CORLISS ENGINE.

-BUILT BY-

WM. A. HARRIS, Providence, R. I.

Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and "Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms. The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and interchangeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice. NO OTHER engine builder has authority to state that he can furnish this engine. The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Proprietor.

[Mention this paper when you write to us.]

THE MILLERS MUTUAL INSURANCE COMPANY OF WISCONSIN

is now issuing Policies of Insurance on all approved applications received so far. The Company has now sufficient members to allow it to increase the risks on any one Mill from \$1,000 to \$3,000.

All matters relating to Insurance should be addressed to

JOHN SCHUETTE, Sec., Manitowoc, Wis.

[Please mention the United States Miller when your write to us.]

CURRENT MATTERS INTERESTING TO MILLERS.

The United States Miller Reporter interviews Secretary Seamans.

Our reporter, desiring to learn something of interest to millers, recently called on Secretary Seamans of the Millers' National Association, and the following interview was the result:

Reporter—Mr. Seamans, if you are not too busy, I would like to get a few points that may be of interest to the readers of the UNITED STATES MILLER.

Sec'y Seamans—Well sir: you are welcome to any information I can give you, provided you send me proof of the article before it is published. I have been grossly misrepresented by some of the reporters for the daily press, and am getting rather chary of interviewers—the milling papers generally, are an exception, however.

R.—The MILLER will be pleased to accede to your wishes and endeavor to report you correctly. What information can you give us regarding the machine wanted for compressing bran?

S.—I have received something over 80 letters, besides several personal applications—some with plans, others making inquiries—quite a number report that they are at work upon a machine that will be a success. One party says he has a machine "cost \$100, pack one to two tons per hour, and filling all our requirements." Here is a letter, quite a curiosity. I have no objections to your reading the letter, (if you can); the sketch is very simple—but you'll have to get a Polack to interpret the letter.

R.—From the correspondence received, what do you consider the prospect for getting a successful machine.

S.—Very favorable.

R.—Do you mean to say that you believe a successful machine will be produced answering the requirements of your circular letter?

S.—Practically, yes. Our committee, while in Chicago, last week, visited a machine and saw it working, that compresses dry bran more densely than we require it at the rate of three or four tons per hour; but the machine is too cumbersome and costly for ordinary mills. I see no reason, however, why it cannot be modified very materially to answer for steam mills, or for water mills, by using compressed air.

R.—I notice some of the papers are disposed to ridicule the offer of \$1,000 for such a machine as too small.

S.—Yes, they seem to have "gone off half-cocked" with the idea that this amount was to buy the machine or invention outright; the fact is a less sum would have answered the purpose just as well as more—the object being to direct attention to what was wanted—and it will be produced without doubt; and this is the true way to get desirable improvements.

R.—If you succeed in bringing out a successful machine, the Cleveland Convention will not have been in vain.

S.—The Cleveland Convention was a success in more ways than one. Never has there been a time when millers looked so carefully into the title of the machinery they desired to purchase, and never have I received so many letters desiring information on this subject—particularly about rolls, centrifugals and dust collectors. In fact, the necessity was never before so imperative; infringements seem to stare you in the face on every hand.

R.—What reply do you generally make?

S.—It depends on circumstances; but generally "To buy only of parties who are willing to secure them in their purchases."

R.—Is it a fact, as I have heard it reported, that some manufacturers have agreed to put a bond with the Association to protect their customers?

S.—Yes. One party has agreed to put up such a bond with a member of the Sub-Ex. Committee as trustee, for such a purpose.

R.—Will you give me the name of the party?

S.—No sir. Not until the matter is consummated—the bond executed and delivered; then it will be published and a circular letter sent to every member of the Association—

R.—Which will give their machines a boom.

S.—Undoubtedly.

R.—Why would not this be a good scheme for others to adopt?

S.—It would, if they are clear in their title to patents on the machines they manufacture.

R.—By the way, have you seen the "Mill Stone" for March?

S.—I am not a subscriber to that paper, and am not as honored as a D. H.

R.—Well, I brought along a copy, thinking, if you had not seen it, it might be interesting

to look through, inasmuch as they seem to have devoted considerable space and some art for your benefit.

S.—Yes, particularly the art; such art is not argument—however it's a good illustration, though the driver is *ran(c)k* and the ass before the wagon is *VERY ran(c)k*. The roller mill on the wagon looks like one built by the backers of the "Mill-Stone" with all of Allis' patented improvements. I suppose this fellow has got down into the Hoop-Pole district of Indiana, hoping to fool that old miller at the door by selling him a machine covered by patents belonging to everybody but the manufacturer of those machines; and perhaps Allis sent him notice of infringement, and perhaps he "went" for that salesman, and probably that is the reason why a manufacturer of rolls was up here from Indiana with his attorney, to see Allis & Co., last week to "arrange things;" and perhaps you'll give my compliments to the "Mill-Stone," and say that the effort reminds me of the butter made in the western country at a very early day, when the cows fed in leek pastures,—it smells very like it.

R.—I see he gives you a dose on "Bed Rock" patents.

S.—Yes. I see, too, he intimates George Harding is receiving \$6,000 a year and expenses looking after the Denchfield matter. That intimation he knows to be untrue, unworthy a publisher claiming to supply facts to sensible readers. In regard to the Mechwart or Ganz patents, I stated this in my report at Cleveland: "I am informed that we may expect ere long to be met by a 'bed rock' patent on the corrugating and use of corrugated chilled iron rolls. If this proves true, and my authority for the information is good, who is to defend it? It certainly ought not to fall upon the 2,500 capacity now represented in our association, while the 20,000 outside will reap equal benefits."

While my "authority" put it in much stronger language than I made use of, and being an extensive miller, interested in no way, directly or indirectly, with the building of mill machinery, and coming to me just prior to the meeting of the convention, I presented it before that body, as it was my duty to do. While I may not have the faith of my informer in the validity of the claim, and while I have since found he was mistaken in regard to some points he named, the indications still exist that some one will have to take up its defense. Who is that some one that is to be? Let the Mill-Stone answer. It is not necessary to "lash in outsiders." I think their day of retribution is not far distant, and I am willing they should have the full enjoyment of it.

R.—Do you believe the Consolidated Co. mean business, as outlined in their letter to the convention?

S.—I know but little outside of Wisconsin as to their intentions or what they are doing; in this State they are collecting royalties at the rate of \$100 a machine and have been for 18 months.

R.—This is where they use the brush, I suppose.

S.—Oh no. If an outsider hasn't a licensed machine, brush or no brush, they cover it just the same with some of their legion of patents; or pretend to.

R.—Do they trouble any of the members of your Association?

S.—Not unless they refused to accept the '79 compromise.

R.—Do they carry out the agreement with the Association, giving a reduction to members buying purifiers?

S.—So far as I know they have done so in every instance, where the members ordered direct. I am promised a statement of how much this discount amounts to, and am assured that the amount will astonish me.

R.—I would like to ask one question in regard to what was meant by "impending litigation" referred to in the call for the Convention at Cleveland? I notice one of the milling papers mentioned that it was the matter of the G. T. Smith Middlings Purifier Co., referred to in their letter read before the Convention. Was that a fact?

S.—No sir. I never saw or heard of that letter till the evening before the Convention met. We've nothing to do with the G. T. Smith Middlings Purifier Co., except to buy purifiers of them at the discount agreed upon.

The "impending" matter was not in a shape to bring before the Convention, consequently remains as it did prior to the meeting. It is one of those cases, like many others that have been before the Committee; their lips are sealed and it would not do to show their hands till the proper time comes.

R.—And that's why they call you a "Star Chamber Committee."

S.—I suppose so; but they forgot to mention that each State annually elects a member of the Executive Committee, and the Executive Committee annually elects the Sub-Executive Committee; its the easiest thing in the world to have a new Sub-Committee every year, if desired.

R.—When do the State Associations have their annual meetings?

S.—Minnesota, Missouri and Wisconsin, and I think Illinois, on the 2d Tuesday in April, which is the 10th this year.

R.—Who will be the next President of the National Association?

S.—Give it up. Mr. Bain declares he will not take it again, and I am sure means what he says; C. H. Seybt would make a good one, but I don't think he would serve. W. P. Brown, of Red Wing, I believe would suit everybody, and he takes great interest in the success of the Association. We have plenty of good "timber," so I don't think we will lack for a good man.

NEWS.

THE City Mills at Anna, Ill., burned April 1. Loss \$19,000; insurance \$9,000.

THE Case Mfg. Co., have sold L. Clisby & Son, Parker, Dakota, breaks and rolls.

S. LITZENBERGER & Co.'s mill at La Fayette, Ind., burned March 19. Loss \$30,000; insurance \$20,000.

KELLY REED & Co.'s flouring mill at Elgin, Ill., burned March 28. Loss \$25,000; insurance \$15,000.

GEO. O. Baker & Co., Selma, Ala., have ordered breaks and rolls from the Case Mfg. Co., Columbus, O.

THE Case Mfg. Co., Columbus, O., are furnishing E. H. Brooks, Carrol, Iowa, with some new machinery.

THE Case Mfg. Co., Columbus, O., have sold to Geo. F. Merz, Rochester, N. Y., a line of break machines.

THE Case Mfg. Co., Columbus, O., have furnished C. M. Ott, Olathe, Kans., with some additional machinery.

MESSRS. ZIRKINS & NORTH have recently purchased two more pairs of Allis rolls in Gray's noiseless belt frames.

THE Case Mfg. Co., Columbus, O., are furnishing H. Weesman, Logan Station, Mo., with some new machinery.

THE Case Mfg. Co., Columbus, O., are furnishing J. P. Roberts Eaton, Rapids, Mich., with some new machinery.

MR. J. C. WARREN of Wauwatosa, Wis., recently put in eight pairs of Allis rolls, all in Gray's noiseless belt frames.

D. H. TYLER of Mosherville, Mich., has ordered of The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., one pair of Stevens rolls.

GOOLD & Shaw, New Windsor, Ill., will start up their mill in a few days on the Case system, of gradual reduction.

THE Case Mfg. Co., Columbus, O., are furnishing John Brinks Jr., Amelia C. H., Va., with a line of new machinery.

R. Laub, Brimfield, Ill., has just placed his order with Stout Mills & Temple, Dayton, O., for Livingston roller mills.

PUTNAM Bros., Wilmet, O., have recently ordered Livingston roller mills, from Stout Mills & Temple, Dayton, Ohio.

THE Case Mfg. Co., Columbus, O., have furnished B. Savage & Son, Alton, Iowa, with some additional machinery.

THE mill of Forseman Bros. Circleville, O., lately started up on the Case system of gradual reduction, with splendid results.

GEO. L. Hays, Piketon, O., started up his mill a few days ago, on the Case system of gradual reduction, with splendid results.

THE works of the Sandwich Mfg. Co. of Sandwich, Ill., were recently damaged by fire to the extent of \$18,000. No insurance.

MESSRS. EDW. P. ALLIS & Co. of Milwaukee, Wis., recently sold Mr. H. Greer of Decorah, Iowa, a Gray's noiseless belt roller mill.

MR. Alex. Ault, Bellaire, O., has purchased a Gray's noiseless belt roller mill, of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

GEO. HEILMAN & Co., Evansville, Ind., have just ordered of Stout Mills & Temple, Dayton, O., three double sets of Livingston mills.

D. B. SEARS Sons, Rock Island, Ill., have given their order to Stout Mills & Temple, Dayton, O., for additional Livingston rolls.

HANAWALT & Co., Tipton, Mo., have lately started up their mill on the Case gradual reduction system, with splendid results.

MESSRS. EDW. P. ALLIS & Co. of Milwaukee, Wis., recently sold the Rolla Mill Co. of Rolla, Mo., a Gray's noiseless belt roller mill.

THOS. BRADFORD & Co. of Cincinnati, O., have placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for Stevens rolls.

THE Renick Mill Co. of Renick, Mo., have been improving their mill by adding an outfit of Allis rolls in Gray's noiseless belt frames.

OWEN EVANS, Limerick Station, Pa., has placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for one pair of Stevens rolls.

MESSRS. EDW. P. ALLIS & Co. of Milwaukee, recently sold Messrs. Burroughs & Pierson of Flint, Mich., a Gray's noiseless belt roller mill.

MESSRS. J. B. Stewart & Co., of Buda, Ill., has put in an Allis' noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

THE Case Mfg. Co., Columbus, O., have taken the contract of C. Harvey Wilber, Saline Co., for a line of machinery of their manufacture.

KANSAS CITY MILLING Co., Kansas City, Mo., have just given their order to Stout Mills & Temple, Dayton, O., for two pairs Livingston rolls.

MESSRS. J. Q. HALTEMAN & Co. of St. Louis, recently ordered a Gray's noiseless belt roller mill from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

P. Allis & Co. of Milwaukee, Wis., for twenty-eight pairs of the celebrated Allis rolls, all in Gray's noiseless frames, for his new mill at Cincinnati.

MR. T. TRENCHARD of Fairton, N. J., recently purchased a Gray's noiseless belt roller mill from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

GAFF, Gent & Thomas, Columbus, Ind., have left their order with Stout Mills & Temple, Dayton, O., for six pair Livingston rolls, for first break.

THE Hudnuts, of Terre Haute, Ind., have purchased two pair more of Allis rolls, in Gray's noiseless belt frames, for their hominy mill.

MESSRS. DUNLOP McCANCE, of Richmond, Va., recently purchased a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

MESSRS. A. J. KNOBLOCK & Co. of Bremen, Ind., has purchased a Gray's noiseless belt roller mill from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

J. W. SMITH of Bloomer, Wis., has recently purchased a No. 2 four-break machine from Messrs. Edw. P. Allis & Co., Reliance Works, Milwaukee, Wis.

MESSRS. EDW. P. ALLIS & Co. of Milwaukee, lately received an order from Messrs. Hicks & Cooper of Canton, O., for a Gray's noiseless belt roller mill.

THE Lanier Mill Co. of Nashville, Tenn., recently placed their order with Messrs. Edw. P. Allis & Co. of Milwaukee, Wis., for a Gray's noiseless belt roller mill.

MESSRS. EDW. P. ALLIS & Co., Milwaukee, Wis., recently sold Mr. G. Ziebold, of Rose Bud, Ill., eighteen pairs of Allis rolls, in Gray's noiseless belt frames.

MESSRS. FRIES & Minnet Bros., of Saline, Mich., recently purchased a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MESSRS. WILLY & Co., of Appleton, Wis., have put in two pairs of Allis rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MESSRS. KNOBEL Bros. of Belleville, Ill., lately purchased two pairs of Allis' rolls, in Gray's noiseless frames, from Mr. Edw. P. Allis & Co., of Milwaukee, Wis.

MR. D. Hamill, of Newton, Kans., has put in two pairs of Allis rolls, in Gray's noiseless belt frame, recently from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

FRANK DENTLER, of Parkville, Mich., has placed an order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for a full line of the celebrated Stevens roller mills.

HEINOLD, Rodenbaugh & Co., Lancaster, N. Y., have ordered of The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., one Stevens roller mill, for grinding middlings.

H. S. Snavely, Junction, Lancaster Co., Pa., have placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for one Stevens roller mill, for germ crushing.

THE Case Mfg. Co., Columbus, O., have the order of McKinnon & Co., Concordia, Kans., for one first break machine and scalping reel, making 3 separations.

MESSRS. EDW. P. ALLIS & Co., of Milwaukee, Wis., recently sold Messrs. H. Nunnemacher, & Co., of same place another of their Gray's noiseless belt roller mills.

MR. JNO. CREE of Detroit, Mich., has improved his mill and added a Gray's noiseless belt roller mill purchased from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

MR. L. B. Brillhart, of Kendallville, Ind., lately put in a Gray's noiseless belt roller mill, from Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis.

CROWGILL & Hill, of Carthage, Mo., are putting in rolls, and for that purpose have lodged with The Jno. T. Noye Mfg. Co., an order for four double Stevens roller mills.

MESSRS. EDW. P. ALLIS & Co., of Milwaukee, Wis., recently sold Messrs. Mauro & Neyhart, of Auburn, N. Y., two pairs of Allis rolls, in Gray's noiseless belt frames.

THE Cockle Separator Mfg. Co. recently placed their order with Messrs. Edw. P. Allis & Co. of Milwaukee, Wis., for six pairs of Allis rolls in Gray's noiseless belt frames.

MR. H. Julius Klingler, of Butler, Pa., recently purchased four pair of Allis' rolls, in Gray's noiseless belt frames, from Mr. Edw. P. Allis & Co., Milwaukee, Wis.

MESSRS. EDW. P. ALLIS & Co., of Milwaukee, Wis., recently received an order from Messrs. Wolf & Hamaker, of Allentown, Pa., for one Gray's noiseless belt roller mill.

MESSRS. EDW. P. ALLIS & Co. of St. Louis, Mo., recently filled an order for forty pairs of Allis rolls in Gray's noiseless belt frames from Mr. Ferd. Schumacher, of Akron, O.

MESSRS. FATH, EWARD & Co. of St. Louis, Mo., recently purchased twelve pairs of Allis rolls in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., Milwaukee Wis.

MESSRS. EDW. P. ALLIS & Co. of Milwaukee, Wis., recently filled an order from Messrs. Richards & Butler of Indianapolis, Ind., for six pairs of Allis rolls in Gray's noiseless frames.

MR. RUSTIN of Evansville, Ind., recently ordered 22 pairs of Allis rolls in Gray's noiseless belt frames from Messrs. Edw. P. Allis & Co. of the Reliance Works at Milwaukee, Wis.

WM. NOTBOHM of Delafield, Wis., has just given Capt. E. W. Pride his order for a full line of Rounds' sectional roller mills manufactured by The Jno. T. Noye Mfg. Co. of Buffalo, N. Y.

MR. A. EISENMAYER of Trenton, Ill., through Messrs. J. Q. Halteman & Co. of St. Louis, has placed his order with Edw. P. Allis & Co. of Milwaukee, Wis., for Gray's noiseless belt roller mill.

MESSRS. SHELLBARGER & GRISWOLD of Topeka, Kas., lately put in another Gray's noiseless belt roller mill in their mill at Topeka; same was from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

THE Great Western Mfg. Co., Leavenworth, Kas., recently placed their order with Messrs. Edw. P. Allis & Co. Milwaukee, Wis., for a Gray's noiseless belt roller mill for one of their customers.

MESSRS. RICHARDS & BUTLER of Indianapolis, Ind., have placed their order with Messrs. Edw. P. Allis & Co. of Milwaukee, for fourteen pairs of Allis Rolls in Gray's noiseless frames for mills that they are furnishing.

MESSRS. EDW. P. ALLIS & Co. of Milwaukee, Wis., recently took the contract for furnishing Mr. C. J. Spillman's mill at Bryantville, Ky., and are putting in two break machines and six pairs of the celebrated Allis rolls in Gray's noiseless frames.

GEO. A. MIX, Oregon, Ill., has recently remodeled his mill and placed his order with Messrs. Edw. P. Allis & Co. for the machinery, which included two of their No. 1 sieve reduction machines and four pairs of Allis rolls in Gray's noiseless belt frames.

MESSRS. EDW. P. ALLIS & Co. of the Reliance Works Milwaukee, Wis., have secured the contract for building and furnishing the new mill of Messrs. J. W. Kauffman, at Bethalto, Ill., and will put in two No 1 sieve reduction machines, and thirty-six pairs of Allis rolls in Gray's noiseless belt frames, together with all the other necessary machinery for a mill of 600 barrels capacity.

BENSON & Spurling, Union, Iowa, have added one 9x18 smooth roll, with patent automatic feed, from the Case Mfg. Co., Columbus, O.

S. G. Fogus, Reno, Nevada, has placed his order through Wm. E. Catlin & Co., with the Case Mfg. Co., of Columbus, O., for breaks, rolls, etc.

SMITH Hill & Co., Quincy, Ill., have ordered from the Case Mfg. Co., a line of break machines, for the mill they are building at Chillicothe, Mo.

J. B. Isett, Spruce Creek, Pa., is putting in one "Little Giant" break machine and scalping reel, making three separations, from the Case Mfg. Co., Columbus, O.

CROUCH & Bro. at Erie, Pa., have given way to the roller boom and will put in ten pairs of Stevens rolls, to be furnished by the John T. Noye Mfg. Co., Buffalo, N. Y.

SHULER & Co. of Minneapolis, Minn., have lodged an order with The Jno. T. Noye Mfg. Co., for a Rounds sectional roller mill for Martin Martins, Merilan, Wis.

THE Jno. T. NOYE MFG. CO. have booked an order for a three-break Noye improved concentrated roller mill, with Stevens rolls, and twelve pairs of line rolls for the Pacific coast.

COLEMAN & Hahn, Homer, O., have now been running their mill on the Case system of gradual reduction, for about 80 days. They say they have the best mill in the state.

AN additional telegraphic order from the Pacific coast demands four more pairs of the Stevens rolls. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will see that they go forward.

THE Case Mfg. Co., Columbus, O., have the contract of Wm. Deubel Co., Ypsilanti, Mich., for breaks, rolls, purifiers, etc., for a full gradual reduction mill on the Case system.

THE Case Mfg. Co., Columbus, O., have the order of Thos. Bradford & Co., Cincinnati, O., for one break machine, to go in one of the numerous mills, they are building.

MESSRS. Hutton, Harris & Co., Auburn, Ill., have recently put in an Allis roller outfit, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

MR. L. V. Rathbun, of Rochester, N. Y., has lately purchased two pairs of porcelain rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

MESSRS. Becker & Underwood, of Dixon, Ill., have ordered two more pairs of Allis' rolls, in Gray's noiseless belt frame, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MR. J. Weber Adams, of Cedarville, Ill., recently ordered ten pairs of Allis' rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

MESSRS. Goodlander, Mill & Elevator Co., of Ft. Scott, Kans., lately purchased another Gray's noiseless belt roller mill, of Messrs. Edw. P. Allis & Co., Milwaukee, Wis.

For the new mill now being built at Pendleton, Ore., there has been placed with The Jno. T. Noye Mfg. Co., an order for six double Stevens roller mills of the improved pattern.

MESSRS. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., recently sold Messrs. Marrow & Bro., of Athensville, Ill., two pairs of Allis rolls, in Gray's noiseless belt frames.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., are placing eighteen pairs of Allis' rolls, in Gray's noiseless belt frames, in the mill of Messrs. Valler & Speis, at Marine, Ill.

MR. H. Hutch, Columbia, Ill., has been remodeling his mill and has put in eight pairs of Allis rolls, in Gray's noiseless frames, from the Reliance Works, of Edw. P. Allis & Co., of Milwaukee, Wis.

THE Case Mfg. Co., Columbus, O., have taken the contract of Mast Troyer & Co., Buena Vista, O., for breaks, rolls, purifiers, scalping chests, etc., for a full gradual reduction mill on the Case system.

THE Saxony Mills, at St. Louis, Mo., recently placed their order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for twenty-four pairs of Allis' rolls, in Gray's noiseless belt frames.

MESSRS. Chisholm Bros. & Gunn, of Minneapolis, Minn., recently placed an order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for eight pairs of Allis rolls, in Gray's noiseless belt frames.

THE Slater Mill Co., of Blanchester, Ohio, have placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for ten pairs of Allis rolls, in Gray's noiseless belt frames, for mills that they are furnishing.

MR. C. Eisenmayer, of Summerfield, Ill., has recently made some improvements in his mill, including the putting in of four pairs of Allis rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co. of Milwaukee, Wis.

STOUT Mills & Temple, Dayton, O., have just sold to the Cuyahoga Forge and Iron Co., Cuyahoga Falls, O., a Gilbert combined mill for breaks, Livingston finishing rolls, bolting chests, and all necessary machinery, for a complete roller mill.

MESSRS. Willford & Northway, the extensive mill furnishers of Minneapolis Minn., lately placed their order with Messrs. Edw. P. Allis & Co., Reliance Works, Milwaukee, Wis., for four pairs of Allis' rolls, in Gray's noiseless belt frames.

MESSRS. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have an order from Mr. J. C. Smith, Mankato, Minn., for two of their new four-break machines, also some of their celebrated Allis' rolls for mills, he is remodeling.

MESSRS. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have taken the contract for remodeling the mill of Messrs. Harris & Co., at Greencastle, Ind. The outfit will include twelve pairs of Allis rolls, in Gray's noiseless belt frames.

MESSRS. Sinker & Davis, of Indianapolis, Ind., recently placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for four pairs of the celebrated Allis' rolls, in Gray's noiseless belt frames, for a mill they are furnishing at Rushville, Ind.

THE Brass Foundry & Machine Works, of Ft. Wayne, Ind., recently placed their order with Messrs. Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., for nine pairs of Allis rolls in Gray's noiseless belt frames, for a job that they have under construction.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., have recently received an order from the Great Western Mfg. Co., of Leavenworth, Kans., for eighteen pairs of Allis rolls, in Gray's noiseless belt frames, for mills, that they are furnishing. The Great Western Mfg. Co., are doing a large business in this line, and are using the celebrated Allis roll, exclusively.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently sold Messrs. E. Sanderson & Co., of same place, four pairs of the celebrated Allis' rolls, in Gray's noiseless belt roller mill frames.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., lately sold The Muskegon City Mill Co., of Muskegon, Mich., two pairs of Allis rolls, in Gray's noiseless frames, for their mill at that place.

THE Hudnutts of Terre Haute, Ind., recently purchased three more pairs of Allis rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., Milwaukee, Wis., for their hominy mills.

THE Garden City Mill Furnishing Co., of Chicago, Ill., recently placed an order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for a line of the celebrated Allis' rolls, for a mill they are furnishing.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently received an order for two pairs of Allis rolls, in Gray's noiseless belt frames, from Messrs. Matthews Bros. for their mill at Anamosa, Iowa.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently furnished Messrs. E. Sanderson & Co., of same place, six more pairs of the celebrated Allis' rolls, in Gray's noiseless frames.

MESSRS. Dow, Gilman & Hancock, of Davenport Iowa, recently purchased four pairs of Allis rolls, in Gray's noiseless belt frames, from Messrs. Edw. P. Allis & Co., of Milwaukee, Wis.

THE Richmond City Mill Works, of Richmond, Ind., have placed their order with Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., for two pairs of Allis' rolls, in Gray's noiseless belt frame.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently filled an order from Messrs. W. D. Washburn & Co., of Minneapolis, Minn., for two more pairs of Allis' rolls, in Gray's noiseless belt frames.

MESSRS. Edw. P. Allis & Co., of Milwaukee, Wis., recently shipped twelve pairs of their celebrated Allis' rolls to their branch house, 318 Pine St., San Francisco, Cal., for mills on the Pacific Coast.

MESSRS. Gunn, Scott & Co., of Minneapolis, Minn., have lately ordered of Messrs. Edw. P. Allis & Co., of Milwaukee, Wis., four pairs of Allis' rolls, in Gray's noiseless belt frames, for their mill at Minneapolis, Minn.

NORDYKE & Marmon Co., Indianapolis, Ind., have ordered one "Little Giant" break machine, from the Case Mfg. Co., Columbus, O., for one of the many mills they are erecting.

O. C. SHEPARD of Medina, O., has tumbled to the roller boom and placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y. for six pairs of Stevens rolls, with the usual recent improvements.

THE Case Mfg. Co., Columbus, O., have taken the contract of H. T. Pendleton, Wentzville, Mo., for breaks, rolls, purifiers, scalping, chest etc., for a full gradual reduction mill on the Case system.

WM. DE GRASS, a Milwaukee millwright, met with a severe accident March 10. While setting up a roller mill at Muskegon, Mich., his arm got caught in some moving gearing and was torn off.

ROOTS & Co., Cincinnati, O., after running two "Little Giant" break machines, for some time have ordered the third one, for their mill at Lawrenceburg, Ind., from the Case Mfg. Co., Columbus, O.

SHULER & Co. of Minneapolis, Minn., have ordered for R. L. Frazee of Frazee City, Minn., two additional pairs of Stevens rolls, from The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., the sole manufacturers.

R. G. Shuler & Co., the popular and reliable mill builders of Minneapolis, Minn., have instructed The Jno. T. Noye Mfg. Co., Buffalo, N. Y., to ship Johnson Bros. at New Richmond, Ind., one pair Stevens rolls.

R. G. SHULER & Co. of Minneapolis, Minn., have captured an order from R. L. Frazee, of Frazee City, Minn., for a full line of ten pairs of Stevens rolls. The Jno. T. Noye Mfg. Co., of Buffalo, N. Y. will furnish them.

B. F. GUMP of Chicago, Ill., the resident agent of the Stevens roller mills at that point, has instructed The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., to ship Knollenberg & Waverling, Quincy, Ill., eight pairs of these popular rolls.

CHAS. Heuber, of St. Louis, Mo., the lively representative of the Stevens roller mills in the state of Illinois and Missouri, has ordered two pairs of these rolls of The Jno. T. Noye Mfg. Co., for Smith, Hill, & Co., of Quincy, Ill.

THE "Diamond" and "Bluff" flouring mills, belonging to the Red Wing Milling Co., of Red Wing, Minn., were destroyed by fire, Sunday March 4. The total loss is estimated at \$200,000, with insurance principally in foreign and Eastern Companies.

W. H. Wakeford, the traveling agent for The Jno. T. Noye Mfg. Co., Buffalo, N. Y., have captured an order from V. H. Crisman, Brouckville, N. Y., for a Noye concentrated roller mill, and separate rolls for germ and bran. All will be of Stevens pattern.

HILL Bros. of Penfield, N. Y., have placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for one of the recently invented and destined to be very popular Rounds sectional roller mill together with rolls for germ crushing.

G. H. & A. S. Hotelling, of Baldwinville, N. Y., have ordered additional Stevens roller mills of the Jno. T. Noye Mfg. Co., of Buffalo, N. Y.

G. M. Beach, of Brillion, Calumet Co., Wis., has placed an order with The Jno. T. Noye Mfg. Co., through E. W. Pride, for a Rounds sectional roller mill.

J. F. Hilbert, of Creve, Mo., has ordered of The Jno. T. Noye Mfg. Co., one single and two double Stevens roller mills.

Jos. Wagner & Co. of San Francisco, Cal., the Pacific Coast representatives of the Stevens roller mills, recently sent in an order to The Jno. T. Noye Mfg. Co., for forty-two double mills, complete, to fill a contract recently obtained by them.

B. F. Gump, the Chicago mill furnisher, has taken the contract for building a mill for Gilbert & Barber at Geneva, Wis., and has placed an order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y. for twelve pairs of Stevens rolls for the same. Gump will do a creditable job, and no mistake.

WM. H. C. Kemp, whose mills recently burned at Williamsport, Md., has determined to rebuild and has placed an order with The Jno. T. Noye Mfg. Co., for a full line of Stevens roller mills, to go in the same.

C. J. Coggin, of Portland, Ia., has ordered of The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., a Rounds sectional roller mill.

THE Case Mfg. Co. Columbus, O., have been awarded the contract of E. T. Noel, Nashville, Tenn., for breaks, rolls, purifiers, etc., for a 300 bbl. gradual reduction mill, on the Case system.

SHULER & Co., of Minneapolis, Minn., have ordered a Rounds sectional roller mill, of The Jno. T. Noye Mfg. Co., for a mill they are building at Wahpeton, D. T.; a single and double Stevens roller mill will also be used.

F. H. BACON, Esq. of Vermillion, O., have determined to adopt the roller system and have placed the order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for eight pairs of Stevens rolls, with the necessary improvements.

MILES & SON of Frankfort, Ky., have determined to put in rolls and have placed an order with The Jno. T. Noye Mfg. Co., Buffalo, N. Y., for nine pairs of Stevens rolls to be furnished with all the recent devices and improvements.

E. W. PRIDE, the popular agent at Neenah, Wis., has bagged an order for a full line (six pairs) of Stevens roller mills to go into the mill of John Basemann, Rib Falls, Marathon Co., Wis. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will fill the order.

B. F. GUMP of Chicago, Ill., the popular mill furnisher, and re-ident agent for the Stevens rolls, has placed an order with The Jno. T. Noye Mfg. Co., of Buffalo, N. Y., for a pair of Stevens rolls for middlings, to go into the mill of Kendall & Smith at Lincoln, Neb.

G. M. ECKERT & Co., Darmstadt, Ill., has lodged an order with The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for seven pairs of the famous Stevens rolls. Chas. Huber, the St. Louis, Mo., milling expert, took the order and will supervise the placing of the rolls in position.

E. W. PRIDE of Neenah, Wis., has captured an order for a three-break Rounds sectional roller mill, and four additional pairs of Stevens rolls to be placed in the mill of Edw. Hermann, Marathon City, Wis. The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., will fill the order.

SHULER & Co. of Minneapolis, Minn., report a lively increase in their business. They have recently accepted an order on the part of The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., for a Rounds Sectional Roller Mill, to be placed in the mill of Chas. Jenny at Monticello, Minn.

THE mill of D. R. Sparks & Co., (everybody knows Sparks) of Alton, Ill., is to be enlarged, and The Jno. T. Noye Mfg. Co. of Buffalo, N. Y., have the order for eight pairs of Stevens rolls for the purpose. This firm was amongst the first to adopt the Stevens rolls in their section of the country.

THE Case Mfg. Co. Columbus, O. some months ago furnished J. Pitt Felt, Emporium, Pa., with one "Little Giant" break machine, and one set double rolls; he was so well pleased with the working of these machines, that he has now placed his order with the same company for a full gradual reduction mill, on the Case system.

The Case Manufacturing Co. of Columbus, O., have just completed the Castalia Flouring Mill, near Sandusky, O. This mill has a capacity of 200 barrels per day, and the Case break machines, purifiers and other special machinery made by the Case Co., used by the milling company, give the best of satisfaction. CASE machinery has an excellent reputation in all sections of the country, and many of the largest and best mills in the United States use more or less of it. For small mills also it is claimed that the Case System is unsurpassed.

For some time it has been known that the Mt. Vernon Mill and Elevator Co., of Mt. Vernon, Ind., have had in contemplation the erection at that place of a full fledged all roller mill including all the most recent and modern improvements.

Notice was given to such firms in this country as would handle such a work to prepare and submit plans, specifications and programmes. It was stipulated that the price should not govern or influence the decision, but that the general excellence of the plans &c., as to location of machinery, its adaptiveness to the required purposes, economical arrangement and the perfection attained in the programme should be the basis of judgment. It may naturally be inferred that such unusual, though not unwise conditions would bring out the best and most competent mill building talent in the country, and it did.

It is doubtful if ever as complete and fine a lot of plans were gotten together in this country. After many days of waiting on the part of the bidders and careful study on the part of the Company, assisted by experts, the contract was finally awarded to The Jno. T. Noye Mfg. Co., of Buffalo, N. Y. The plans show a capacity of two hundred barrels of flour in twenty-four hours, all the work in its various stages being done on rolls.

In the complement of machinery is included a 16 x 30 Cummer Engine, two 22 x 46 boilers with pumps, &c., &c., to bring water up from the Ohio River, eight double Stevens roller mills, three centrifugal flour dressing machines, six Smith purifiers, bran dusters, packers, dust catchers &c. &c., for a mill of this capacity. The Noye Co., are to be congratulated on the success, they have attained and so well merited in this case.

AN EVENT FOR THE SOUTH. Nashville, Tenn., is to have a new full-fledged roller mill, "with all the latest improvements;" this has been in contemplation for some time, and much study and investigation has been given to it to find out if possible what plan to adopt. Whose machines and system to employ, &c. The proprietor is Dr. E. T. Noel, of Nashville, well and favorably known. The contractor, who is putting in all the work under a strong and binding guarantee, that the mill must be fully up to the best, is Mr. G. A. Weber, of the same city, whose name is a guarantee for good work, and good results. Mr. Weber was chosen as the expert referee at the Cincinnati Millers Exposition, to decide upon the merits of the different competing systems, represented there. The machines, and system to be employed, are those of the Case Mfg. Co., known as the "Case System." Mr. Noel made a very thorough study of the present state of the milling art, visiting Minneapolis and many other advanced milling centers, and allowing himself ample time to investigate the merits of the different machines and their various claims to superiority, before finally deciding, and Mr. Weber's experience and skill was also brought into requisition to this end. It is expected, that the mill will be in full blast in time for the new crop, and its starting and operation will be watched with more than usual

interest, by numerous of the dusty fraternity, both North and South. Every modern idea will be introduced to make it a modern ideal mill. Large purifying capacity will be employed and the centrifugal reel will take an important part in the bolting. These machines, as well as the breaks and rolls, are all manufactured by the Case Company.

The mill is to have ample capacity for 300 bbls. in 24 hours. This is a step in the advance, for the South, and cannot but prove to be well taken.

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A 2-Run Grist Mill, Water Power. Dwelling, Some Land. For full information address,

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A good two-run four mill. Water power. Building 32 by 56 feet. Good dwelling and 20 acres land, with plenty timber. Poor health is my reason for selling. Mill is located seven miles from county seat in a good wheat growing section. Address

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IMPORTANT NOTICE TO MILLERS.

The RICHMOND MILL WORKS, and RICHMOND MILL FURNISHING WORKS are wholly removed to Indianapolis, Ind., with all the former patterns, tools, and machinery, and those of the firm who formerly built up and established the reputation of this house; therefore to save delay or miscarriage, all letters intended for this concern should be addressed with care to

NORDYKE & MARMON CO.,
INDIANAPOLIS, IND.



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Unless you wish to know that C. F. MILLER, of Mansfield, O., is better prepared than ever before, to furnish Materials and Plans for Stone or Roller Mills of any desired capacity. A very superior quality Genuine Zurich Silk Anchor Bolting Cloth, by the piece or made up with webbing in any quantity desired. Prices always reasonable. Personal attention given to all communications relating to Plans, Specifications and general arrangement, and selection of Machinery free to my customers.

Thankful for past favors, and wishing my Milling friends a happy and prosperous year.

I am very respectfully,

C. F. MILLER.

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HENRY HERZER,

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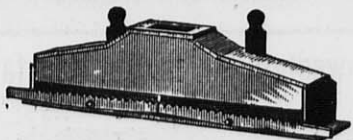
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We will furnish you anything required at reasonable prices. We keep every kind of Furnishing in stock.
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Manufacturers and Sole Proprietors of the

BECKER BRUSH,

Galt's Combined Smut and Brush Machine.

The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

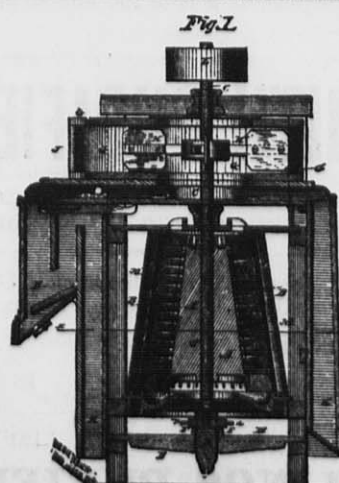
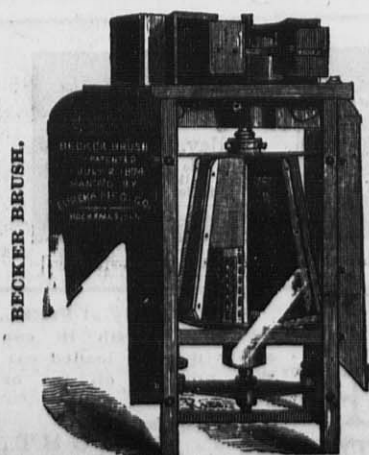
ADJUSTABLE WHILE IN MOTION.

Nearly 1,000 of these Machines in Use.

In the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

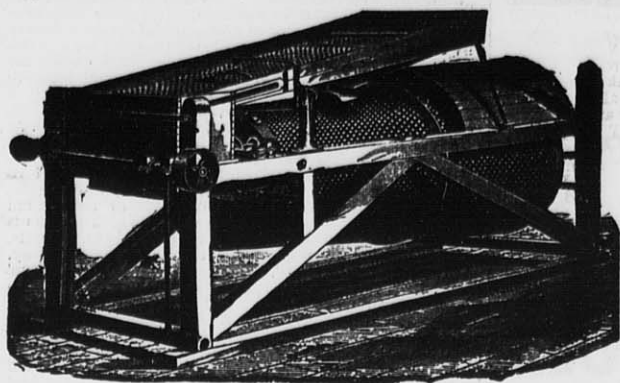
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GENERAL MILL FURNISHERS



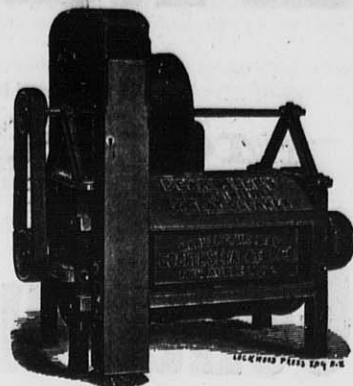
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(Kurth's Patent,) Also built in combination with

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Also Sole Manufacturer of BEARDSLEE'S PAT. GRAIN CLEANER.



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Perforated Zinc at Bottom Figures.

Send for Illustrated Catalogue.

WE GUARANTEE GREAT CAPACITY combined with GOOD QUALITY OF WORK. Any common Sieve will separate the cockle from wheat, but to separate it WITHOUT WASTE is the GREATEST FEATURE of our Machine. A WASTEFUL machine is a DAILY LOSS OF MONEY in a mill. There is NO MACHINE in the MARKET which can stand comparison with ours.

Carbondale, Ill., Dec. 2, 1881.
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Gentlemen:—Replying to your late favor, would say that we can cheerfully recommend your Cockle Separator as doing all that you claim for it. We have tested ours thoroughly by this time and know whereof we speak. We would not think of doing without it, having tried it once, and can conscientiously vouch for its good work.
Yours respectfully,
BROWN & WINFREY.

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Sirs:—The combined machine I bought of you has been running about three weeks. It certainly does all you claim for it, and is the most perfect Separator that I have any knowledge of.
Yours respectfully,
B. O. CARPENTER.

Hixton, Jackson Co., Wis., Dec. 30, '81
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Respectfully yours,
W. T. PRICE,
per D. G. THOMAS.

P. S.—I have been milling now for twenty-seven years, but never have I seen anything that will equal yours in cleaning wheat.

As an Oat Separator it is No. 1, and for Cockle it cannot be beat. I can take screenings and separate the cockle from it without wasting any of the small wheat. In my opinion every mill in the United States ought to have one, and if I were to build a mill I would have no other. I remain
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Yours truly,
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Yours truly,
WILLIAM LISTMAN.

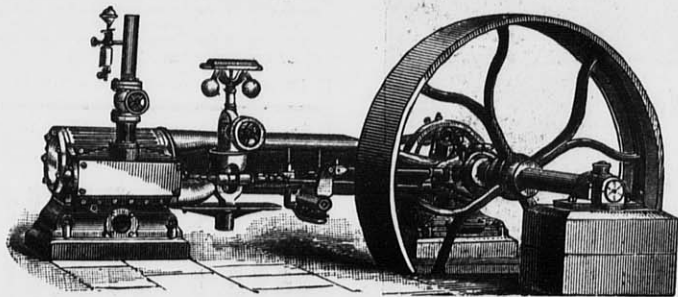
Milwaukee, Wis., Aug. 23, 1881.
Cockle Separator Mfg. Co.
Gentlemen:—The Beardslee's Grain Cleaners which we have purchased from you for our New Era and Milwaukee Mills give us the best of satisfaction. Experienced millers having seen the work done by the machine agree with us, that it cannot be beat. You are at liberty to use our names as a reference, and to any party calling on us we will be pleased to show the machine in operation.
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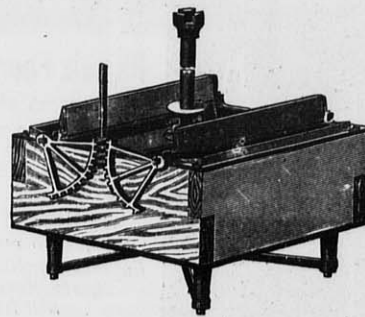
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